SNAP 2012 Question Paper with Solution

Time Allowed :2 Hours	**Maximum Marks :**150	**Total Questions :**150

General Instructions

SNAP 2012 – INSTRUCTIONS TO CANDIDATES:

1. No clarification on the Question Paper will be entertained
2. There are 60 MCQs; attempt all.
3. Each question carries 1 mark; total marks = 150.
4. Negative marking: 0.25 mark for each wrong answer.
5. Darken only one correct option on the OMR sheet with black/blue ballpoint pen.
6. Multiple or incorrect marking methods will be treated as wrong.
7. Do not write anything on the OMR except required details.
8. Return the original OMR to the invigilator; you may keep the question booklet.
9. Use of unfair means will result in cancellation; impersonation is a criminal offence.
10. No electronic devices allowed inside the test hall.
11. Do not leave before the end of the test.

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1. At a college football game, $\frac{4}{5}$ of the lower-deck seats were sold. The lower deck contains $\frac{1}{4}$ of all stadium seats. Overall, $\frac{2}{3}$ of all stadium seats were sold. What fraction of the unsold seats in the stadium lay in the lower deck?

(A) $\frac{3}{20}$
(B) $\frac{1}{6}$
(C) $\frac{1}{5}$
(D) $\frac{1}{3}$

Correct Answer: (A) $\frac{3}{20}$

Solution:

Step 1: Understanding the Problem
We need to find the ratio of the number of unsold seats in the lower deck to the total number of unsold seats in the entire stadium. We can solve this by expressing each quantity in terms of the total number of seats in the stadium.

Step 2: Detailed Explanation
Let T be the total number of seats in the stadium.

Information given:
1. The number of seats in the lower deck is $\frac{1}{4}$ of the total seats.
Number of lower-deck seats $= \frac{1}{4}T$.

2. $\frac{4}{5}$ of the lower-deck seats were sold.
Number of sold lower-deck seats $= \frac{4}{5} \times$ (Number of lower-deck seats) $= \frac{4}{5} \times \frac{1}{4}T = \frac{1}{5}T$.

3. Overall, $\frac{2}{3}$ of all stadium seats were sold.
Total number of sold seats $= \frac{2}{3}T$.

Calculations:
First, we find the number of unsold seats in the lower deck.
Unsold lower-deck seats = (Total lower-deck seats) - (Sold lower-deck seats)

$$\text{Unsold lower-deck seats} = \frac{1}{4}T - \frac{1}{5}T = \left(\frac{5-4}{20}\right)T = \frac{1}{20}T$$

Next, we find the total number of unsold seats in the stadium.
Total unsold seats = (Total seats) - (Total sold seats)

$$\text{Total unsold seats} = T - \frac{2}{3}T = \frac{1}{3}T$$

Finally, we find the required fraction.
Fraction $= \frac{\text{Unsold seats in the lower deck}}{\text{Total unsold seats in the stadium}}$

$$\text{Fraction} = \frac{\frac{1}{20}T}{\frac{1}{3}T} = \frac{1}{20} \times \frac{3}{1} = \frac{3}{20}$$

Step 3: Final Answer
The fraction of the unsold seats in the stadium that lay in the lower deck is $\frac{3}{20}$.

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Quick Tip

In problems involving fractions of a whole, assume the total quantity to be a variable (like T) or a convenient number (like the LCM of the denominators). This simplifies calculations and helps avoid confusion.

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2. A country follows a progressive taxation system under which the income tax rates applicable varies for different slabs of income. Total tax is computed by calculating the tax for each slab and adding them up. The rates applicable are as follows :
If annual income is Rupess 1,70,000, what is the total tax payable?

Annual income	Tax rate
0 - 50,000	0%
50,001 - 60,000	10%
60,001 - 1,50,000	20%
¿ 1,50,000	30%

(A) Rupess 51,000
(B) Rupess 17,000
(C) Rupess 34,000
(D) Rupess 25,000

Correct Answer: (D) 25,000

Solution:

Step 1: Understanding the Concept:
Progressive taxation means that you pay tax on different portions (slabs) of your income at different rates. We need to calculate the tax for each slab up to the total income and then sum them up.

Step 2: Key Formula or Approach:
Total Tax = Tax on Slab 1 + Tax on Slab 2 + Tax on Slab 3 + ...
For each slab, Tax = (Amount in that slab) × (Tax rate for that slab).

Step 3: Detailed Explanation:
The annual income is Rupess 1,70,000. Let's break this down into the given tax slabs.
1. **Slab 1 (0 - 50,000):**
The amount in this slab is Rupess 50,000.

$$\text{Tax}_1 = 0\% \text{ of } 50,000 = Rupess0$$

2. **Slab 2 (50,001 - 60,000):**
The amount in this slab is Rupess (60,000 - 50,000) = Rupess 10,000.

$$\text{Tax}_2 = 10\% \text{ of } 10,000 = 0.10 \times 10,000 = Rupess1,000$$

3. **Slab 3 (60,001 - 1,50,000):**
The amount in this slab is Rupess (1,50,000 - 60,000) = Rupess 90,000.

$$\text{Tax}_3 = 20\% \text{ of } 90,000 = 0.20 \times 90,000 = Rupess18,000$$

4. **Slab 4 (¿ 1,50,000):**
The remaining income falls into this slab.
Amount in this slab = Rupess (1,70,000 - 1,50,000) = Rupess 20,000.

$$\text{Tax}_4 = 30\% \text{ of } 20,000 = 0.30 \times 20,000 = Rupess6,000$$

5. **Total Tax Payable:**
Sum the tax from all slabs.

$$\text{Total Tax} = \text{Tax}_1 + \text{Tax}_2 + \text{Tax}_3 + \text{Tax}_4$$

$$\text{Total Tax} = 0 + 1,000 + 18,000 + 6,000 = Rupess25,000$$

Step 4: Final Answer:
The total tax payable on an annual income of Rupess 1,70,000 is Rupess 25,000.

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Quick Tip

A common mistake in slab taxation problems is to apply a single tax rate to the entire income. Always remember to break the income down into the given slabs and calculate the tax for each portion separately before adding them up.

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3. A private telephone company serving a small community makes a profit of 12 per subscriber, if it has 725 subscribers. It decides to reduce the rate by a fixed sum for each subscriber over 725, thereby reducing the profit by 1 paise per subscriber. Thus, there will be profit of 11.99 on each of the 726 subscribers, 11.98 on each of the 727 subscribers etc. The number of subscribers which will give the company, the maximum profit, is:

(A) 961
(B) 962
(C) 963
(D) None of these

Correct Answer: (C) 963

Solution:

Step 1: Understanding the Concept
This is a profit maximization problem. The total profit is a function of the number of subscribers. As the number of subscribers increases beyond a certain point, the profit per subscriber decreases. This relationship can be modeled by a quadratic equation, and the maximum profit corresponds to the vertex of the parabola.

Step 2: Key Formula or Approach
Let x be the number of subscribers over 725.
The total number of subscribers will be $N = 725 + x$.
The profit per subscriber is reduced by 1 paise (0.01) for each additional subscriber.
The new profit per subscriber will be $P_{sub} = 12 - 0.01x$.

The total profit $P(x)$ is given by:

$$P(x) = (\text{Total Subscribers}) \times (\text{Profit per Subscriber})$$
$$P(x) = (725 + x)(12 - 0.01x)$$

To find the maximum profit, we can find the vertex of this quadratic function. For a quadratic $ax^2 + bx + c$, the vertex occurs at $x = -\frac{b}{2a}$.

Step 3: Detailed Explanation
First, expand the profit function $P(x)$:

$$P(x) = 725 \times 12 - 725 \times 0.01x + 12x - 0.01x^2$$
$$P(x) = 8700 - 7.25x + 12x - 0.01x^2$$
$$P(x) = -0.01x^2 + 4.75x + 8700$$

This is a quadratic equation of the form $ax^2 + bx + c$, with $a = -0.01$, $b = 4.75$, and $c = 8700$. Since $a < 0$, the parabola opens downwards, and its vertex represents a maximum point.

Now, we find the value of x at the vertex:

$$x = -\frac{b}{2a} = -\frac{4.75}{2(-0.01)} = -\frac{4.75}{-0.02} = \frac{475}{2} = 237.5$$

This means the maximum profit occurs when there are 237.5 additional subscribers. Since the number of subscribers must be an integer, the maximum profit will occur for one of the integers closest to 237.5, which are $x = 237$ and $x = 238$.

Let's find the total number of subscribers for these values of x:
Case 1: $x = 237$
Total subscribers $= 725 + 237 = 962$.

Case 2: $x = 238$
Total subscribers $= 725 + 238 = 963$.

Because the vertex is exactly halfway between 237 and 238, the profit for both cases will be identical. Let's verify:
For $N = 962$ ($x = 237$):

$$\text{Total Profit} = 962 \times (12 - 0.01 \times 237) = 962 \times (12 - 2.37) = 962 \times 9.63 = 9264.06$$

For $N = 963$ ($x = 238$):

$$\text{Total Profit} = 963 \times (12 - 0.01 \times 238) = 963 \times (12 - 2.38) = 963 \times 9.62 = 9264.06$$

Step 4: Final Answer
The number of subscribers that will give the company the maximum profit is 963.

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Quick Tip

For maximization/minimization problems, setting up the correct function is crucial. Here, the total profit is a product of two changing quantities. This often leads to a quadratic function. The vertex formula $x = -b/(2a)$ is a shortcut to find the maximum or minimum without using calculus. If the result is not an integer, always test the two closest integers.

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4. A milkman buys milk contained in 10 vessels of equal size. If he sells his milk at Rupess 5 per litre, he loses Rupess 200; if he sells it at Rupess 6 per litre, he would gain Rupess 150 on the whole. Find the number of litres contained in each vessel.

(A) 20 litres
(B) 30 litres
(C) 25 litres
(D) 35 litres

Correct Answer: (D) 35 litres

Solution:

Step 1: Understanding the Concept:
This problem relates cost price, selling price, profit, and loss. The key insight is that the difference in total earnings between the two selling scenarios is caused solely by the difference in the selling price per litre.

Step 2: Key Formula or Approach:
Let L be the total quantity of milk in litres. Total difference in money = (Difference in selling price per litre) $\times$ L. The total difference in money is the swing from a loss to a gain.

Step 3: Detailed Explanation:
Let's use a simple logical approach.
1. **Difference in Selling Price per Litre:**
The two selling prices are Rupess 5/litre and Rupess 6/litre. The difference is Rupess 6 - Rupess 5 = Rupess 1 per litre.
2. **Total Difference in Earnings:**
In the first case, there is a loss of Rupess 200 (meaning earnings are Cost Price - 200).
In the second case, there is a gain of Rupess 150 (meaning earnings are Cost Price + 150).
The total swing or difference in earnings between these two scenarios is Rupess 200 + Rupess 150 = Rupess 350.
3. **Calculate Total Quantity of Milk:**
This total difference of Rupess 350 is generated by the Rupess 1 difference in selling price for every litre of milk sold.
Therefore, the total quantity of milk (L) is:

$$L = \frac{\text{Total difference in earnings}}{\text{Difference in selling price per litre}} = \frac{Rupess350}{Rupess1/\text{litre}} = 350 \text{ litres}$$

4. **Calculate Litres per Vessel:**
The total quantity of 350 litres is contained in 10 equal vessels.

$$\text{Litres per vessel} = \frac{\text{Total quantity}}{\text{Number of vessels}} = \frac{350}{10} = 35 \text{ litres}$$

Step 4: Final Answer:
The number of litres contained in each vessel is 35.

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Quick Tip

For problems involving a change from loss to profit due to a change in selling price, the total difference is the sum of the loss and the profit. This simple method avoids setting up simultaneous equations and is much faster.

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5. A firm of readymade garments makes both men's and women's shirts. Its average profit is 6% of the sales. Average profit in men's shirts is 8% of the sales and women's shirts comprise 60% of the output. The average profit per sale rupee in women's shirts is:

(A) 0.0466
(B) 0.0666
(C) 0.0166
(D) None of these

Correct Answer: (A) 0.0466

Solution:

Step 1: Understanding the Concept:
This is a problem of weighted averages. The overall average profit is a weighted average of the profits from men's and women's shirts, where the weights are the respective proportions of sales.

Step 2: Key Formula or Approach:
Let P_T be the total average profit, P_M be the profit from men's shirts, and P_W be the profit from women's shirts.
Let W_M and W_W be the weights (proportion of sales) for men's and women's shirts, respectively.

The formula for weighted average is: $P_T = (P_M \times W_M) + (P_W \times W_W)$.

Step 3: Detailed Explanation:
1. **Identify the given values:**
- Overall average profit, $P_T = 6\% = 0.06$. - Average profit in men's shirts, $P_M = 8\% = 0.08$. - Women's shirts comprise 60% of the output. We assume that the proportion of output is the same as the proportion of sales value. So, the weight for women's shirts, $W_W = 60\% = 0.6$.
- The weight for men's shirts, W_M, must be the remaining part: $W_M = 100\% - 60\% = 40\% = 0.4$.
2. **Set up the equation:**
We need to find P_W, the average profit for women's shirts.

$$P_T = (P_M \times W_M) + (P_W \times W_W)$$

$$0.06 = (0.08 \times 0.4) + (P_W \times 0.6)$$

3. **Solve for P_W:**

$$0.06 = 0.032 + 0.6P_W$$

$$0.6P_W = 0.06 - 0.032$$

$$0.6P_W = 0.028$$

$$P_W = \frac{0.028}{0.6} = \frac{28}{600} = \frac{7}{150}$$

4. **Convert to decimal:**

$$P_W = 7 \div 150 \approx 0.04666...$$

The question asks for the average profit per sale rupee, which is the profit percentage expressed as a decimal.
Step 4: Final Answer:
The average profit per sale rupee in women's shirts is approximately 0.0466.

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Quick Tip

Weighted average problems are common in exams. Always identify the components, their values, and their respective weights (proportions). Ensure the sum of weights equals 1 (or 100%).

6. In an express train, the numbers of passengers travelling in A.C. Sleeper Class, First Class and Sleeper Class are in the ratio 1 : 2 : 3, and the fares of these classes are in the ratio 5 : 4 : 2. If the total income from the train is Rupess 54000, find the income from the A.C. Sleeper Class.

(A) Rupess 8000
(B) Rupess 12000
(C) Rupess 10000
(D) None of these

Correct Answer: (D) None of these

Solution:

Step 1: Understanding the Concept:
The income from each class is the product of the number of passengers and the fare per passenger. We can find the ratio of incomes from the given ratios and then use this to distribute the total income.

Step 2: Key Formula or Approach:
Ratio of Income = Ratio of (Number of Passengers × Fare). Income from a class = $(\frac{\text{Ratio part of that class}}{\text{Sum of all ratio parts}})\times$ Total Income.

Step 3: Detailed Explanation:
1. **Given Ratios:**
- Ratio of Passengers (AC : First : Sleeper) = 1 : 2 : 3. - Ratio of Fares (AC : First : Sleeper) = 5 : 4 : 2.
2. **Calculate the Ratio of Incomes:**
The income ratio is found by multiplying the corresponding parts of the passenger and fare ratios. - Income Ratio (AC) = $1 \times 5 = 5$. - Income Ratio (First) = $2 \times 4 = 8$. - Income Ratio (Sleeper) = $3 \times 2 = 6$. So, the Ratio of Incomes (AC : First : Sleeper) = 5 : 8 : 6.
3. **Calculate Total Ratio Parts:**
Sum of the parts of the income ratio = 5 + 8 + 6 = 19.
4. **Calculate Income from A.C. Sleeper Class:**
The total income is Rupess 54,000. The A.C. class corresponds to 5 parts out of the total 19 parts.

$$\text{Income from AC} = \left(\frac{5}{19}\right) \times 54000$$

$$\text{Income from AC} = \frac{270000}{19} \approx 14210.53$$

This value is not an integer and does not match options (A), (B), or (C). The total income Rupess 54,000 is not divisible by 19, suggesting a possible typo in the question's values.
Step 4: Final Answer:
Based on the given numbers, the income from the A.C. Sleeper Class is approximately Rupess 14,211. Since this does not match any of the first three options, the correct choice is (D) None of these.

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Quick Tip

When working with ratios, you don't need the exact numbers. You can work with the ratio parts directly. If the final calculation gives a non-integer or a value that doesn't fit the options, re-check your calculations. If they are correct, the data in the question might be flawed, making None of these a likely answer.

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7. A dealer buys three kinds of dry fruits at Rupess 100, Rupess 80 and Rupess 60 per kg in the weight ratio 12 : 15 : 20. Selling the first two together gives him 20% profit; overall he has no gain no loss. Find the percentage loss on the third kind.

(A) 40%
(B) 20%
(C) 30%
(D) 50%

Correct Answer: (A) 40%

Solution:

Step 1: Understanding the Concept:
This problem involves calculating cost price (CP) and selling price (SP) for different parts of a mixture. The principle of no gain no loss means that the total SP equals the total CP. We can use this to find the SP of the third kind of dry fruit and subsequently its loss percentage.

Step 2: Key Formula or Approach:
1. Total Cost Price (CP) = $\sum(\text{weight}_i \times \text{price}_i)$
2. Total Selling Price (SP) = Total CP (for no profit, no loss)
3. SP for a part = CP of that part $\times(1 + \frac{\text{Profit\%}}{100})$
4. Loss% = $\frac{\text{CP}-\text{SP}}{\text{CP}} \times 100$

Step 3: Detailed Explanation:
Let the weights of the three kinds of dry fruits be 12k, 15k, and 20k kg for some constant k.
1. **Calculate the Cost Price (CP) of each part and the total CP**:
- CP of first kind (CP1) = $12k \times 100 = Rupess1200k$
- CP of second kind (CP2) = $15k \times 80 = Rupess1200k$
- CP of third kind (CP3) = $20k \times 60 = Rupess1200k$
- Total CP = $1200k + 1200k + 1200k = Rupess3600k$

2. **Determine the Total Selling Price (SP)**:
Since there is no overall gain or loss, Total SP = Total CP = Rupess 3600k.

3. **Calculate the SP of the first two kinds**:
- CP of the first two kinds = CP1 + CP2 = $1200k + 1200k = Rupess 2400k$
- Profit on selling the first two is 20%.
- SP of the first two kinds = $2400k \times (1 + \frac{20}{100}) = 2400k \times 1.2 = Rupess 2880k$

4. **Calculate the SP of the third kind (SP3)**:
- Total SP = (SP of first two) + SP3
- $3600k = 2880k + \text{SP3}$
- SP3 = $3600k - 2880k = Rupess 720k$

5. **Calculate the percentage loss on the third kind**:
- CP of the third kind = Rupess 1200k
- SP of the third kind = Rupess 720k
- Loss = CP3 - SP3 = $1200k - 720k = Rupess 480k$
- Loss% = $\left(\frac{\text{Loss}}{\text{CP3}}\right) \times 100 = \left(\frac{480k}{1200k}\right) \times 100 = \frac{48}{120} \times 100 = 0.4 \times 100 = 40\%$

Step 4: Final Answer:
The percentage loss on the third kind of dry fruit is 40%.

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Quick Tip

To simplify calculations in ratio problems, you can drop the variable 'k' and work directly with the ratio numbers (12, 15, 20) as if they are the actual weights. The variable 'k' will cancel out in the final percentage calculation anyway.

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8. Rahul starts a business with Rupess 8000. After 6 months, Sanjay joins with some capital. If their profits after one year are equal, find Sanjay's investment.

(A) Rupess 17,500
(B) Rupess 18,000
(C) Rupess 16,000
(D) Rupess 16,500

Correct Answer: (C) Rupess 16,000

Solution:

Step 1: Understanding the Concept:
In a partnership, the profit is distributed in the ratio of the 'equivalent capitals'. The equivalent capital for each partner is the product of their investment and the duration for which they invested it.

Step 2: Key Formula or Approach:
The ratio of profits is equal to the ratio of the product of capital and time period.

$$\frac{\text{Profit}_1}{\text{Profit}_2} = \frac{\text{Capital}_1 \times \text{Time}_1}{\text{Capital}_2 \times \text{Time}_2}$$

Step 3: Detailed Explanation:
1. **Rahul's Investment**:
- Capital = Rupess 8,000
- Time = 1 year = 12 months
- Rahul's equivalent capital = $8000 \times 12 = 96000$

2. **Sanjay's Investment**:
- Let Sanjay's capital be Rupess S.
- Sanjay joins after 6 months, so his investment is for $12 - 6 = 6$ months.
- Sanjay's equivalent capital = $S \times 6$

3. **Equating the Profits**:
It is given that their profits are equal. This means their equivalent capitals are also equal.

$$\text{Rahul's equivalent capital} = \text{Sanjay's equivalent capital}$$
$$96000 = S \times 6$$
$$S = \frac{96000}{6}$$
$$S = 16000$$

Step 4: Final Answer:
Sanjay's investment was Rupess 16,000.

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Quick Tip

For partnership problems, always convert each partner's investment into an equivalent investment for 1 month by multiplying their capital by the number of months they were in the business. The profit sharing ratio is then simply the ratio of these equivalent investments.

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9. A watch is bought for Rupess 1950 in cash and sold for Rupess 2200 on one-year credit. If the interest rate is 10% p.a., find the trader's gain/loss.

(A) Gains Rupess 5
(B) Gains Rupess 50
(C) Loses Rupess 30
(D) Gains Rupess 30

Correct Answer: (B) Gains Rupess 50

Solution:

Step 1: Understanding the Concept:
This problem involves the time value of money. The selling price of Rupess 2200 is received one year in the future. To compare it with the cost price paid today, we must find the present value (PV) of that future amount. The gain or loss is the difference between the PV of the selling price and the cost price.

Step 2: Key Formula or Approach:
The Present Value (PV) of a future sum (FV) is given by:

$$PV = \frac{FV}{1+r}$$

where 'r' is the interest rate per period.
Gain/Loss = PV of Selling Price - Cost Price.

Step 3: Detailed Explanation:
1. **Identify the given values**:
- Cost Price (CP) = Rupess 1950 (paid today)
- Future Selling Price (FV) = Rupess 2200 (to be received in 1 year)
- Interest rate (r) = 10% p.a. = 0.10
- Time (t) = 1 year

2. **Calculate the Present Value (PV) of the selling price**:
This is the value of Rupess 2200 in today's terms.

$$PV = \frac{2200}{1+0.10} = \frac{2200}{1.1}$$

To remove the decimal, multiply the numerator and denominator by 10:

$$PV = \frac{22000}{11} = Rupess2000$$

So, the effective selling price of the watch in today's money is Rupess 2000.

3. **Calculate the gain or loss**:
- Gain = Effective SP - CP
- Gain = Rupess 2000 - Rupess 1950 = Rupess 50

Step 4: Final Answer:
The trader makes a gain of Rupess 50.

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Quick Tip

When a transaction involves credit (payment at a future date), always discount the future cash flow to its present value before calculating profit or loss. A common mistake is to ignore the interest and calculate profit as 2200 - 1950 = 250, which is incorrect.

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10. An article is listed at Rupess 65. A customer bought this article for Rupess 56.16 and got two successive discounts, the first being 10%. What was the other discount rate allowed by the shopkeeper?

(A) 3%
(B) 4%
(C) 6%
(D) 2%

Correct Answer: (B) 4%

Solution:

Step 1: Understanding the Concept:
Successive discounts are applied one after the other. The first discount is calculated on the list price, and the second discount is calculated on the price remaining after the first discount has been applied.

Step 2: Key Formula or Approach:
1. Price after 1st discount = List Price $\times(1 - \frac{\text{Discount}_1\%}{100})$
2. Final Price = Price after 1st discount $\times(1 - \frac{\text{Discount}_2\%}{100})$

Step 3: Detailed Explanation:
1. **Given Information**:
- List Price (LP) = Rupess 65
- Final Selling Price (SP) = Rupess 56.16
- First discount (D_1) = 10%

2. **Calculate the price after the first discount**:
- Amount of first discount = 10% of Rupess 65 = $0.10 \times 65 = Rupess 6.50$
- Price after first discount = LP - Amount of discount = $65 - 6.50 = Rupess 58.50$

3. **Calculate the second discount**:
The second discount is applied on Rupess 58.50 to bring the price down to Rupess 56.16.
- Amount of second discount = Price after 1st discount - Final SP
- Amount of second discount = $58.50 - 56.16 = Rupess 2.34$

4. **Calculate the second discount rate (D_2)**:
The discount rate is the discount amount as a percentage of the price on which it was calculated.

$$D_2\% = \left(\frac{\text{Amount of second discount}}{\text{Price after 1st discount}}\right) \times 100$$

$$D_2\% = \left(\frac{2.34}{58.50}\right) \times 100$$

To simplify the fraction: $\frac{234}{5850} \times 100 = \frac{234}{58.5}$.
We can test the options or calculate directly: $234 \div 58.5 = 4$.

$$D_2\% = 4\%$$

Step 4: Final Answer:
The other discount rate allowed by the shopkeeper was 4%.

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Quick Tip

For successive discounts of $d_1\%$ and $d_2\%$, the final price is $LP \times (1 - d_1/100) \times (1 - d_2/100)$. You can use this formula to solve for an unknown discount rate directly. Here: $56.16 = 65 \times (1 - 0.10) \times (1 - d_2/100) \implies 56.16 = 65 \times 0.9 \times (1 - d_2/100) \implies 56.16 = 58.5 \times (1 - d_2/100)$, which leads to the same calculation.

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11. A company has 50,000 preferred shares with dividend 20% and 20,000 common shares; par value of each share is Rupess 10. The total profit is Rupess 1,80,000, of which Rupess 30,000 is kept in reserve and the rest distributed to shareholders. Find the dividend percent paid to common shareholders.

(A) 20%
(B) 24%
(C) 25%
(D) 30%

Correct Answer: (C) 25%

Solution:

Step 1: Understanding the Concept:
Corporate profits are first used to pay any obligations (like reserves), then dividends to preferred shareholders, and the remaining amount is distributed among common shareholders. The dividend percentage is calculated based on the total par value of the shares.

Step 2: Key Formula or Approach:
1. Amount for distribution = Total Profit - Reserves
2. Dividend for Preferred Shares = Total Par Value of Preferred Shares × Dividend Rate
3. Amount for Common Shares = Amount for distribution - Dividend for Preferred Shares

4. Dividend % for Common Shares = $\frac{\text{Amount for Common Shares}}{\text{Total Par Value of Common Shares}} \times 100$

Step 3: Detailed Explanation:
1. **Calculate the amount available for distribution**:
- Total Profit = Rupess 1,80,000
- Amount kept in reserve = Rupess 30,000
- Distributable Profit = $1,80,000 - 30,000 = Rupess 1,50,000$

2. **Calculate the dividend for preferred shareholders**:
- Number of preferred shares = 50,000
- Par value per share = Rupess 10
- Total par value of preferred shares = $50,000 \times 10 = Rupess 5,00,000$
- Preferred dividend rate = 20%
- Dividend paid to preferred shareholders = 20% of Rupess 5,00,000 = $0.20 \times 5,00,000 = Rupess 1,00,000$

3. **Calculate the amount available for common shareholders**:
- Amount for Common Shareholders = Distributable Profit - Preferred Dividend
- Amount for Common Shareholders = $1,50,000 - 1,00,000 = Rupess 50,000$

4. **Calculate the dividend percent for common shareholders**:
- Number of common shares = 20,000
- Par value per share = Rupess 10
- Total par value of common shares = $20,000 \times 10 = Rupess 2,00,000$
- Dividend Percent = $\left(\frac{\text{Total dividend for common shares}}{\text{Total par value of common shares}}\right) \times 100$
- Dividend Percent = $\left(\frac{50,000}{2,00,000}\right) \times 100 = \frac{1}{4} \times 100 = 25\%$

Step 4: Final Answer:
The dividend percent paid to common shareholders is 25%.

black

Quick Tip

Remember the pecking order for profit distribution: Taxes, Interest, Reserves, Preferred Dividends, and finally Common Dividends. The dividend percentage is always calculated on the par value (or face value) of the shares, not the market price.

---

12. A man buys apples at a certain price per dozen and sells them at eight times that price per hundred. What is his gain or loss percent?

(A) 4% loss
(B) 8% loss
(C) 4% gain

(D) $6\frac{1}{4}\%$ gain

Correct Answer: (A) 4% loss

Solution:

Step 1: Understanding the Concept:
To calculate profit or loss percentage, we must compare the cost price (CP) and selling price (SP) for the same quantity of goods. The problem gives CP and SP for different quantities (dozen vs. hundred), so we need to standardize them.

Step 2: Key Formula or Approach:
1. Assume a convenient Cost Price.
2. Calculate CP and SP for the same quantity of items.
3. Loss% $= \frac{\text{CP}-\text{SP}}{\text{CP}} \times 100$

Step 3: Detailed Explanation:
1. **Assume a Cost Price**:
- Let the Cost Price (CP) of 1 dozen (12) apples be Rupess x.

2. **Calculate the CP of a single apple**:
- CP of 1 apple $= \frac{x}{12}$

3. **Determine the Selling Price**:
- The selling price is for a hundred apples.
- SP of 100 apples = 8 times the CP of a dozen $= 8 \times x = Rupess8x$.

4. **Calculate the SP of a single apple**:
- SP of 1 apple $= \frac{8x}{100}$

5. **Compare CP and SP of a single apple**:
- We have CP $= \frac{x}{12}$ and SP $= \frac{8x}{100} = \frac{2x}{25}$.
- To compare, find a common denominator for 12 and 25, which is 300.
- CP $= \frac{x}{12} = \frac{25x}{300}$
- SP $= \frac{2x}{25} = \frac{24x}{300}$
- Since CP ($\frac{25x}{300}$) ¿ SP ($\frac{24x}{300}$), there is a loss.

6. **Calculate the Loss Percent**:
- Loss per apple = CP - SP $= \frac{25x}{300} - \frac{24x}{300} = \frac{x}{300}$
- Loss% $= \left(\frac{\text{Loss}}{\text{CP}}\right) \times 100 = \left(\frac{x/300}{25x/300}\right) \times 100 = \left(\frac{1}{25}\right) \times 100 = 4\%$

Step 4: Final Answer:
The man incurs a 4% loss.

black

Quick Tip

To avoid fractions, calculate the CP and SP for a quantity that is the LCM of the units given. Here, units are dozen (12) and hundred (100). LCM(12, 100) = 300. - CP of 12 apples = Rupess x. CP of 300 apples = (300/12) x = 25x. - SP of 100 apples = Rupess 8x. SP of 300 apples = (300/100) 8x = 24x. - CP=25x, SP=24x. Loss = x. Loss% = (x/25x) 100 = 4%.

---

13. By selling 12 notebooks, the seller earns a profit equal to the selling price of 2 notebooks. What is his percentage profit?

(A) 25%
(B) 20%
(C) $16\frac{2}{3}\%$
(D) Data inadequate

Correct Answer: (B) 20%

Solution:

Step 1: Understanding the Concept:
This problem relates profit, cost price (CP), and selling price (SP). The profit is given in terms of the selling price, which allows us to establish a relationship between the CP and SP of the notebooks.

Step 2: Key Formula or Approach:
1. Profit = Selling Price (SP) - Cost Price (CP)
2. Profit% = $\frac{\text{Profit}}{\text{CP}} \times 100$

Step 3: Detailed Explanation:
Let's denote the Cost Price of one notebook as 'c' and the Selling Price of one notebook as 's'.
1. **Formulate the equation based on the transaction of 12 notebooks**:
- Total Selling Price for 12 notebooks = $12s$
- Total Cost Price for 12 notebooks = $12c$
- Profit from selling 12 notebooks = Total SP - Total CP = $12s - 12c$

2. **Use the given condition for profit**:
- The problem states that the profit is equal to the selling price of 2 notebooks.
- Profit = $2s$

3. **Equate the two expressions for profit**:
- $12s - 12c = 2s$
- Rearrange the equation to find the relationship between 's' and 'c'.
- $10s = 12c$
- $\frac{s}{c} = \frac{12}{10} = \frac{6}{5}$

This means that for every Rupess 5 of cost, the selling price is Rupess 6.

4. **Calculate the percentage profit**:
The profit on a single item is $s - c$.

$$\text{Profit\%} = \frac{\text{Profit}}{\text{CP}} \times 100 = \frac{s-c}{c} \times 100 = \left(\frac{s}{c} - 1\right) \times 100$$

Substitute the value of $\frac{s}{c}$:

$$\text{Profit\%} = \left(\frac{6}{5} - 1\right) \times 100 = \left(\frac{1}{5}\right) \times 100 = 20\%$$

Step 4: Final Answer:
The percentage profit is 20%.

black

Quick Tip

A quick way to solve such problems: The cost of 12 notebooks is recovered by selling $(12 - 2) = 10$ notebooks. So, CP of 12 = SP of 10. This gives $\frac{SP}{CP} = \frac{12}{10} = \frac{6}{5}$. The gain is 1 part on a cost of 5 parts, which is a $\frac{1}{5} = 20\%$ profit.

---

14. A manufacturer can sell all he produces at Rupess 60 each. It costs Rupess 40 in materials and labour to produce each item and overhead expenses are Rupess 3000 per week. How many units should be produced and sold to make a profit of at least Rupess 1000 per week?

(A) 300
(B) 250
(C) 400
(D) 200

Correct Answer: (D) 200

Solution:

Step 1: Understanding the Concept:
This is a cost-revenue analysis problem. The total profit is the total revenue minus the total costs. Total costs consist of variable costs (which depend on the number of units) and fixed costs (overheads). We need to set up an inequality to find the number of units for a desired minimum profit.

Step 2: Key Formula or Approach:
- Total Revenue (TR) = Selling Price per unit × Number of units (n)
- Total Cost (TC) = (Variable Cost per unit × n) + Fixed Costs

- Profit = TR - TC
- We need to solve the inequality: Profit ≥ 1000

Step 3: Detailed Explanation:
1. **Identify costs and revenue per unit**:
- Selling Price (SP) per unit = Rupess 60
- Variable Cost (VC) per unit (materials and labour) = Rupess 40
- Fixed Cost (FC) per week (overheads) = Rupess 3000
- Let 'n' be the number of units produced and sold per week.

2. **Calculate the contribution margin per unit**:
- Contribution Margin = SP per unit - VC per unit
- Contribution Margin = $60 - 40 = Rupess20$
This is the profit generated by each unit before considering fixed costs.

3. **Set up the profit equation**:
- Total Profit = (Total Contribution) - Fixed Costs
- Total Profit = $(20 \times n) - 3000$

4. **Set up and solve the inequality for the target profit**:
- The desired profit is at least Rupess 1000.
- $(20 \times n) - 3000 \geq 1000$
- $20n \geq 1000 + 3000$
- $20n \geq 4000$
- $n \geq \frac{4000}{20}$
- $n \geq 200$

Step 4: Final Answer:
The manufacturer should produce and sell at least 200 units to make a profit of at least Rupess 1000 per week. The minimum number of units is 200.

black

Quick Tip

Think in terms of contribution margin. Each unit contributes Rupess 20 towards covering the fixed costs and then generating profit. To cover the fixed cost of Rupess 3000 and make a profit of Rupess 1000, a total of Rupess 4000 must be generated from contributions. At Rupess 20 per unit, this requires 4000/20 = 200 units. This method is often faster.

---

15. An aeroplane first flew with a speed of 440 km/h and covered some distance. It still had to cover 770 km less than what it had already covered, and it flew this remainder at 660 km/h. The average speed for the entire flight was 500 km/h. Find the total distance.

(A) 3250 km
(B) 2750 km
(C) 4400 km
(D) 1375 km

Correct Answer: (B) 2750 km

Solution:

Step 1: Understanding the Concept:
This is a problem based on the relationship between distance, speed, and time. The key is to use the formula for average speed, which is Total Distance divided by Total Time.

Step 2: Key Formula or Approach:
- Time = Distance / Speed
- Average Speed = $\frac{\text{Total Distance}}{\text{Total Time}}$
- Total Time = Time for Part 1 + Time for Part 2

Step 3: Detailed Explanation:
1. **Define variables for distance**:
- Let the distance covered in the first part of the flight be 'x' km.
- Speed for the first part = 440 km/h.
- The remaining distance is 770 km less than the first part, so it is $(x - 770)$ km.
- Speed for the second part = 660 km/h.

2. **Express Total Distance and Total Time in terms of 'x'**:
- Total Distance (D) = First part + Second part = $x + (x - 770) = 2x - 770$ km.
- Time for the first part $(t_1) = \frac{\text{Distance}}{\text{Speed}} = \frac{x}{440}$ hours.
- Time for the second part $(t_2) = \frac{\text{Distance}}{\text{Speed}} = \frac{x-770}{660}$ hours.
- Total Time (T) $= t_1 + t_2 = \frac{x}{440} + \frac{x-770}{660}$ hours.

3. **Use the average speed formula to create an equation**:
- Average Speed = $\frac{\text{Total Distance}}{\text{Total Time}}$
- $500 = \frac{2x-770}{\frac{x}{440}+\frac{x-770}{660}}$

4. **Solve the equation for 'x'**:
- First, simplify the denominator (Total Time). The LCM of 440 and 660 is 1320.
- $T = \frac{3x}{1320} + \frac{2(x-770)}{1320} = \frac{3x+2x-1540}{1320} = \frac{5x-1540}{1320}$
- Substitute this back into the average speed equation:
- $500 = \frac{2x-770}{(5x-1540)/1320} = \frac{(2x-770)\times 1320}{5x-1540}$
- $500(5x - 1540) = 1320(2x - 770)$
- $2500x - 770000 = 2640x - 1016400$
- $1016400 - 770000 = 2640x - 2500x$
- $246400 = 140x$

- $x = \frac{24640}{14} = 1760$ km.

5. **Calculate the total distance**:
- Total Distance (D) $= 2x - 770 = 2(1760) - 770 = 3520 - 770 = 2750$ km.

Step 4: Final Answer:
The total distance for the entire flight is 2750 km.

black

Quick Tip

In average speed problems involving different speeds for different parts of a journey, the average speed is a weighted average of the speeds, but weighted by time, not distance. Never just average the speeds (e.g., (440+660)/2). Using the formula Average Speed = Total Distance / Total Time is always correct.

---

16. Train A running at 60 km/h leaves Mumbai for Delhi at 6 p.m. Train B running at 90 km/h also leaves for Delhi at 9 p.m. Train C leaves Delhi for Mumbai at 9 p.m. If all three trains meet at the same time between Mumbai and Delhi (distance = 1260 km), find the speed of Train C.

(A) 60 km/h
(B) 90 km/h
(C) 120 km/h
(D) 135 km/h

Correct Answer: (C) 120 km/h

Solution:

Step 1: Understanding the Concept:
This is a relative speed problem involving three objects. First, we need to find the time and location where the two trains starting from Mumbai (A and B) meet. Since all three trains meet at the same time, this will also be the meeting time and location for Train C. We can then use this information to calculate the speed of Train C.

Step 2: Key Formula or Approach:
1. Distance = Speed $\times$ Time.
2. For objects moving in the same direction, relative speed is the difference of their speeds.
3. For objects moving in opposite directions, relative speed is the sum of their speeds.

Step 3: Detailed Explanation:
Part 1: Find the meeting point of Train A and Train B.

1. Train A starts at 6 p.m. Train B starts at 9 p.m. In the 3 hours from 6 p.m. to 9 p.m., Train A has already travelled some distance.
- Distance covered by A in 3 hours = 60 km/h $\times$ 3 h = 180 km.
2. At 9 p.m., Train A is 180 km ahead of Train B, and both are moving in the same direction. Train B is faster, so it will catch up to Train A.
- Relative speed of B with respect to A = Speed of B - Speed of A = $90 - 60 = 30$ km/h.
- Time for B to catch A = $\frac{\text{Initial Distance between them}}{\text{Relative Speed}} = \frac{180 \text{ km}}{30 \text{ km/h}} = 6$ hours.
3. So, Train B catches Train A at 6 hours after 9 p.m., which is 3 a.m. the next day. This is the meeting time for all three trains.
4. Let's find the meeting location. The distance from Mumbai is the distance travelled by Train B in 6 hours.
- Meeting distance from Mumbai = Speed of B $\times$ Time = 90 km/h $\times$ 6 h = 540 km.

Part 2: Find the speed of Train C.
1. Train C starts from Delhi at 9 p.m. and meets the other trains at 3 a.m.
- Time of travel for Train C = 3 a.m. - 9 p.m. = 6 hours.
2. The total distance between Mumbai and Delhi is 1260 km. The meeting point is 540 km from Mumbai.
- Distance travelled by Train C (from Delhi) = Total distance - Meeting distance from Mumbai
- Distance travelled by C = $1260 - 540 = 720$ km.
3. Now, we can calculate the speed of Train C.
- Speed of C = $\frac{\text{Distance travelled by C}}{\text{Time of travel for C}} = \frac{720 \text{ km}}{6 \text{ h}} = 120$ km/h.

Step 4: Final Answer:
The speed of Train C is 120 km/h.

black

Quick Tip

Break down complex multi-object problems into simpler two-object scenarios first. Here, finding the meeting point of A and B was the crucial first step. Once the meeting time and place are known, the problem reduces to a simple calculation for the third object.

---

17. A contractor undertakes to build a wall in 50 days. He employs 50 people for the same. However, after 25 days he finds that only 40% of the work is complete. How many more men need to be employed to complete the work in time?

(A) 25
(B) 30
(C) 35
(D) 20

Correct Answer: (A) 25

Solution:

Step 1: Understanding the Concept:
This is a classic Time and Work problem that can be solved using the concept of man-days. The amount of work done is proportional to the number of men and the number of days they work. We can set up a proportion to find the number of men required to complete the remaining work in the remaining time.

Step 2: Key Formula or Approach:
The formula relating men (M), days (D), and work (W) is:

$$\frac{M_1 \times D_1}{W_1} = \frac{M_2 \times D_2}{W_2}$$

This formula states that the rate of work (man-days per unit of work) is constant.

Step 3: Detailed Explanation:
Part 1: Work already done
- Number of men (M_1) = 50
- Number of days worked (D_1) = 25
- Amount of work completed (W_1) = 40% = 0.4

Part 2: Work remaining
- Total time = 50 days. Time remaining (D_2) = 50 − 25 = 25 days.
- Total work = 100%. Work remaining (W_2) = 100% − 40% = 60% = 0.6.
- Let the total number of men required for the remaining work be M_2.

Part 3: Apply the formula and solve for M_2

$$\frac{50 \times 25}{0.4} = \frac{M_2 \times 25}{0.6}$$

Since the number of days (25) is the same for both parts of the calculation, it cancels out.

$$\frac{50}{0.4} = \frac{M_2}{0.6}$$
$$M_2 = 50 \times \frac{0.6}{0.4} = 50 \times \frac{6}{4} = 50 \times 1.5$$
$$M_2 = 75$$

So, a total of 75 men are required to complete the work on time.

Part 4: Calculate how many more men are needed
- Men already employed = 50
- Men required = 75
- Additional men needed = 75 − 50 = 25

Step 4: Final Answer:
25 more men need to be employed.

black

Quick Tip

In Time and Work problems, define 1 unit of work for the entire project. Here, 0.4 units were done. 0.6 units remain. Work rate of 1 man = R. Total work rate in Phase 1 = 50R. Work done = 50R 25 = 1250R man-days. This is 0.4 of total work. So, Total Work = 1250R / 0.4 = 3125R man-days. Remaining work = 0.6 3125R = 1875R man-days. This must be done in 25 days. So, Men needed = 1875R / 25 = 75R. Which means 75 men. Additional men = 75 - 50 = 25.

---

20. A man in a train notices that he can count 21 telephone posts in one minute. If they are known to be 50 metres apart, then at what speed is the train travelling?

(A) 45 km/h
(B) 60 km/h
(C) 63 km/h
(D) 65 km/h

Correct Answer: (B) 60 km/h

Solution:

Step 1: Understanding the Concept:
The distance covered by the train is determined by the number of intervals between the telephone posts, not the number of posts themselves. Once we calculate the total distance and know the time taken, we can find the speed.

Step 2: Key Formula or Approach:
1. Total Distance = (Number of posts - 1) $\times$ Distance between posts.
2. Speed = $\frac{\text{Total Distance}}{\text{Time Taken}}$.
3. Unit conversion: To convert m/s to km/h, multiply by $\frac{18}{5}$. To convert m/min to km/h, multiply by $\frac{60}{1000}$.

Step 3: Detailed Explanation:
1. **Calculate the number of intervals**:
- The man counts 21 posts. The number of gaps or intervals between 'n' posts is always 'n-1'.
- Number of intervals = $21 - 1 = 20$.

2. **Calculate the total distance covered**:
- Distance between consecutive posts = 50 metres.
- Total distance = Number of intervals $\times$ Distance per interval
- Total distance = 20×50 metres = 1000 metres.
- Since 1000 metres = 1 kilometre, the distance covered is 1 km.

3. **Identify the time taken**:
- The time taken to cover this distance is given as 1 minute.

4. **Calculate the speed**:
- Speed $= \frac{\text{Distance}}{\text{Time}} = \frac{1 \text{ km}}{1 \text{ minute}}$.
- To express the speed in km/h, we need to convert the time from minutes to hours.
- 1 minute $= \frac{1}{60}$ hours.
- Speed $= \frac{1 \text{ km}}{1/60 \text{ h}} = 1 \times 60$ km/h $= 60$ km/h.

Step 4: Final Answer:
The speed of the train is 60 km/h.

black

Quick Tip

A very common trap in this type of question is using the number of posts (21) instead of the number of intervals (20) to calculate the distance. Always remember that the journey starts at the first post and ends at the last one, covering 'n-1' gaps.

---

21. A man buys a certain quantity of apples, mangoes and bananas. If the mangoes were to cost the same as apples, he would have to forego the bananas to buy the same number of mangoes as he had bought earlier (for the same total amount). The amount spent by him on mangoes and bananas together is 50% more than the amount spent on apples. The total amount spent is Rupess 140. The number of mangoes bought is the same as the number of bananas. If he wishes to buy the same number of apples as well, how much additional amount would he have to spend?

(A) 56
(B) 140
(C) 28
(D) 42

Correct Answer: (C) 28

Solution:

Step 1: Understanding the Concept:
This problem requires setting up and solving a system of equations based on the relationships given between the costs and quantities of three different fruits. We can break down the total expenditure and use the given conditions to find the values needed.

Step 2: Key Formula or Approach:
Let A_a, A_m, A_b be the amounts spent on apples, mangoes, and bananas.

Let q_a, q_m, q_b be the quantities and p_a, p_m, p_b be the prices.
Amount = Quantity $\times$ Price.

Step 3: Detailed Explanation:
1. **Break down the total expenditure**:
- Total amount spent = Rupess 140.
- Let the amount spent on apples be A_a.
- The amount spent on mangoes and bananas together $(A_m + A_b)$ is 50% more than the amount spent on apples.
- $A_m + A_b = A_a \times (1 + 0.50) = 1.5 \times A_a$.
- The total amount is the sum: $A_a + (A_m + A_b) = 140$.
- Substitute the relation: $A_a + 1.5A_a = 140 \implies 2.5A_a = 140$.
- $A_a = \frac{140}{2.5} = \frac{1400}{25} = Rupess56$.
- Amount on apples is Rupess 56. Amount on mangoes and bananas together is $1.5 \times 56 = Rupess84$. (Check: 56 + 84 = 140).

2. **Use the other conditions to relate prices and quantities**:
- We are given that the number of mangoes equals the number of bananas: $q_m = q_b$.
- We are told: If mangoes cost the same as apples (i.e., new price $p'_m = p_a$), he would forego bananas ($A_b = 0$) to buy the same quantity of mangoes (q_m). - This means the original amount spent on mangoes and bananas together is now spent only on mangoes at the price of apples.
- Original spending: $q_m p_m + q_b p_b = Rupess84$. - New spending: $q_m \times p_a$. - The problem states these amounts are equal: $q_m p_a = q_m p_m + q_b p_b = 84$.
- So, $q_m p_a = 84$.

3. **Determine the goal**:
- The man wishes to buy the same number of apples as well. This implies he wants the quantity of apples to be equal to the quantity of mangoes he bought, i.e., he wants to have q_m apples in total.
- He has already bought q_a apples. We know the amount spent on apples is $A_a = q_a p_a = Rupess56$.
- He needs to buy $(q_m - q_a)$ more apples.
- The additional amount required is $(q_m - q_a) \times p_a = q_m p_a - q_a p_a$.

4. **Calculate the additional amount**:
- We found $q_m p_a = Rupess84$.
- We found $q_a p_a = Rupess56$.
- Additional amount = $84 - 56 = Rupess28$.

Step 4: Final Answer:
He would have to spend an additional Rupess 28.

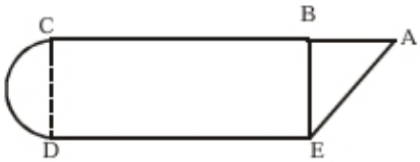
black

Quick Tip

The wording of this question is complex. Break it down sentence by sentence and translate each piece of information into a mathematical equation. Focusing on the amounts spent (A_a, A_m, A_b) first simplifies the problem significantly.

---

22. In a special racing event, the person who enclosed the maximum area would be the winner and would get Rupess 100 every square metre of area covered by him/her. Jonsson, who successfully completed the race and was the eventual winner, enclosed the area shown in the figure below. What is the prize money won? Note: The arc from C to D makes a complete semi-circle. Given: AB = 3 m, BC = 10 m, CD = 2 m, BE = 2 m.



(A) Rupess 2914
(B) Rupess 2457
(C) Rupess 2614
(D) Rupess 2500

Correct Answer: (B) Rupess 2457

Solution:

Step 1: Understanding the Concept:
The problem requires calculating the area of a composite shape and then multiplying it by the prize rate. The composite shape appears to be made of a rectangle, a triangle, and a semi-circle. We must make logical assumptions about the dimensions based on the provided labels, even if the diagram is not perfectly to scale.

Step 2: Key Formula or Approach:
- Area of rectangle = length $\times$ width
- Area of triangle = $\frac{1}{2}\times$ base $\times$ height
- Area of semi-circle = $\frac{1}{2}\pi r^2$
- Total Area = Area(rectangle) + Area(triangle) + Area(semi-circle)
- Prize Money = Total Area $\times$ 100

Step 3: Detailed Explanation:
Based on the figure and labels, the most plausible interpretation is that the total area is the sum of three distinct geometric shapes:
1. **Rectangle**: The central part of the figure (BCE and the region below it) can be interpreted as a rectangle. The dimensions are most likely length = BC = 10 m and width = BE = 2 m.

$$\text{Area}_{\text{rectangle}} = 10 \text{ m} \times 2 \text{ m} = 20 \text{ m}^2$$

2. **Triangle**: The shape ABE is a triangle. The base is given as BE = 2 m. The dimension AB = 3 m is best interpreted as the height of the triangle relative to the base BE.

$$\text{Area}_{\text{triangle}} = \frac{1}{2} \times \text{base} \times \text{height} = \frac{1}{2} \times 2 \text{ m} \times 3 \text{ m} = 3 \text{ m}^2$$

3. **Semi-circle**: The arc from C to D is a semi-circle with diameter CD = 2 m.
- Radius (r) = $\frac{\text{diameter}}{2} = \frac{2}{2} = 1$ m.

$$\text{Area}_{\text{semi-circle}} = \frac{1}{2}\pi r^2 = \frac{1}{2} \times \pi \times (1)^2 = \frac{\pi}{2} \text{ m}^2$$

Using the approximation $\pi \approx 3.14159$:

$$\text{Area}_{\text{semi-circle}} \approx \frac{3.14159}{2} \approx 1.57 \text{ m}^2$$

4. **Total Area**:

$$\text{Total Area} = \text{Area}_{\text{rectangle}} + \text{Area}_{\text{triangle}} + \text{Area}_{\text{semi-circle}}$$
$$\text{Total Area} = 20 + 3 + \frac{\pi}{2} = 23 + 1.57 \approx 24.57 \text{ m}^2$$

5. **Calculate the Prize Money**:

$$\text{Prize Money} = \text{Total Area} \times \text{Rate per m}^2 = 24.57 \times 100 = Rupess2457$$

Step 4: Final Answer:
The prize money won is approximately Rupess 2457.

black

Quick Tip

For geometry problems based on diagrams in competitive exams, look for the simplest interpretation of the shapes. Assume right angles and standard formulas unless stated otherwise. The fact that the calculated answer matches an option is a strong confirmation of your interpretation.

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23. A lawn is in the form of an isosceles triangle. The cost of turfing on it came to Rupess 1,200 at Rupess 4 per m². If the base be 40 m long, find the length of each side.

(A) 25 m
(B) 24 m
(C) 26 m
(D) None of these

Correct Answer: (A) 25 m

Solution:

Step 1: Understanding the Concept:
This problem combines basic mensuration with the properties of an isosceles triangle and the Pythagorean theorem. First, we find the area of the triangle from the total cost and rate of turfing. Then, using the area and base, we find the height. Finally, we use the height and half the base to find the length of the equal sides.

Step 2: Key Formula or Approach:
1. Area of Triangle $= \frac{\text{Total Cost}}{\text{Cost per unit area}}$
2. Area of Triangle $= \frac{1}{2} \times \text{base} \times \text{height}$
3. In an isosceles triangle, the altitude to the base bisects it, forming two right-angled triangles.
4. Pythagorean Theorem: $(\text{Hypotenuse})^2 = (\text{Base})^2 + (\text{Height})^2$

Step 3: Detailed Explanation:
1. **Calculate the area of the lawn**:

$$\text{Area} = \frac{\text{Total cost of turfing}}{\text{Rate per m}^2} = \frac{Rupess1,200}{Rupess4/\text{m}^2} = 300 \text{ m}^2$$

2. **Calculate the height of the triangle**:
- We know the area and the base.
- Area $= \frac{1}{2} \times \text{base} \times \text{height}$
- $300 = \frac{1}{2} \times 40 \times \text{height}$
- $300 = 20 \times \text{height}$
- Height $= \frac{300}{20} = 15$ m.

3. **Find the length of the equal sides**:
- The altitude of an isosceles triangle drops from the vertex between the equal sides and bisects the base. This creates two congruent right-angled triangles.
- For each right-angled triangle:
- The height is 15 m.
- The base is half of the original triangle's base $= \frac{40}{2} = 20$ m.
- The hypotenuse is the equal side of the isosceles triangle (let's call it 's').
- Using the Pythagorean theorem: $s^2 = (\text{height})^2 + (\text{half-base})^2$
- $s^2 = 15^2 + 20^2$
- $s^2 = 225 + 400 = 625$
- $s = \sqrt{625} = 25$ m.

Step 4: Final Answer:
The length of each of the equal sides is 25 m.

black

Quick Tip

Recognizing Pythagorean triplets can save time. The sides of the right-angled triangle we formed are 15 and 20. This is a multiple of the basic (3, 4, 5) triplet. $15 = 5 \times 3$, $20 = 5 \times 4$. Therefore, the hypotenuse must be $5 \times 5 = 25$.

---

24. A survey on a sample of 25 new cars checked for three options—air-conditioning (A), radio (R), and power windows (P). Data: 15 had A; 12 had R; 11 had P; 6 had A&R but no P; 2 had A&P but no R; 4 had R&P (total); 3 had all three. How many cars had none of the options?

(A) 4
(B) 3
(C) 1
(D) 2

Correct Answer: (D) 2

Solution:

Step 1: Understanding the Concept:
This is a problem of set theory, best solved using a Venn diagram. We are given data for three overlapping sets (A, R, P) and the total number of elements in the universal set. The goal is to find the number of elements outside all three sets.

Step 2: Key Formula or Approach:
Total $= |A \cup R \cup P| + \text{None}$
$|A \cup R \cup P|$ can be found by summing the number of elements in each of the seven distinct regions of the three-circle Venn diagram.

Step 3: Detailed Explanation:
Let's fill the Venn diagram regions step-by-step, starting from the center.
1. **All three (A R P)**: Given as 3. This is the central region.
2. **A & R but no P (A R P')**: Given as 6.
3. **A & P but no R (A P R')**: Given as 2.
4. **R & P (total) (R P)**: Given as 4. This includes the central region. So, the number of cars with R & P but no A is:
- $|R \cap P \cap A'| = |R \cap P| - |A \cap R \cap P| = 4 - 3 = 1$.
5. **Only A**: The total for A is 15. This includes the intersection regions.
- $|A_{\text{only}}| = |A| - |A \cap R \cap P'| - |A \cap P \cap R'| - |A \cap R \cap P|$
- $|A_{\text{only}}| = 15 - 6 - 2 - 3 = 4$.
6. **Only R**: The total for R is 12.
- $|R_{\text{only}}| = |R| - |A \cap R \cap P'| - |R \cap P \cap A'| - |A \cap R \cap P|$
- $|R_{\text{only}}| = 12 - 6 - 1 - 3 = 2$.
7. **Only P**: The total for P is 11.

- $|P_{\text{only}}| = |P| - |A \cap P \cap R'| - |R \cap P \cap A'| - |A \cap R \cap P|$
- $|P_{\text{only}}| = 11 - 2 - 1 - 3 = 5$.

8. **Total cars with at least one option**: Sum all the distinct regions calculated above.
- $|A \cup R \cup P| = (\text{Only A}) + (\text{Only R}) + (\text{Only P}) + (\text{A\&R only}) + (\text{A\&P only}) + (\text{R\&P only}) + (\text{All three})$
- $|A \cup R \cup P| = 4 + 2 + 5 + 6 + 2 + 1 + 3 = 23$.

9. **Total cars with none of the options**:
- Total cars surveyed = 25.
- None = Total - (At least one) = $25 - 23 = 2$.

Step 4: Final Answer:
2 cars had none of the options.

black

Quick Tip

When solving Venn diagram problems, always start filling the values from the innermost region (the intersection of all sets) and work your way outwards. Be careful to distinguish between data given for an entire intersection (like R P) and data for a specific part of an intersection (like A R but no P).

---

25. Large (L), medium (M) and small (S) ships bring water. Given: 4L = 7S; and 3M carry the same as 2L + 1S. A fleet of 15L, 7M, 14S made 36 journeys and brought a certain quantity of water. How many journeys would 12L, 14M, 21S need to bring the same quantity?

(A) 32
(B) 25
(C) 29
(D) 49

Correct Answer: (C) 29

Solution:

Step 1: Understanding the Concept:
This is a work-rate problem where the work is carrying water and the rate is the capacity of a fleet per journey. We first need to establish a common unit of capacity for the different ship sizes (L, M, S). Then, we can calculate the total quantity of water transported and find how many journeys a different fleet would take.

Step 2: Key Formula or Approach:
1. Establish capacity ratios (e.g., express L and M in terms of S).
2. Total Quantity = (Capacity of Fleet 1 per journey) × (Number of journeys for Fleet 1).
3. Number of journeys for Fleet 2 = $\frac{\text{Total Quantity}}{\text{Capacity of Fleet 2 per journey}}$.

Step 3: Detailed Explanation:
1. **Establish capacity ratios**:
- We are given $4L = 7S \implies L = \frac{7}{4}S$.
- We are given $3M = 2L + 1S$. Substitute the expression for L:
- $3M = 2\left(\frac{7}{4}S\right) + S = \frac{7}{2}S + S = \frac{9}{2}S$.
- $M = \frac{1}{3} \times \frac{9}{2}S = \frac{3}{2}S$.
- So, the capacities are related as $L = \frac{7}{4}S$ and $M = \frac{3}{2}S$. To work with integers, we can set S=4. Then L=7 and M=6. The ratio L:M:S is 7:6:4. Let's use these ratio units for capacity.

2. **Calculate the capacity of Fleet 1 per journey**:
- Fleet 1: 15L, 7M, 14S.
- Capacity of Fleet 1 = $(15 \times 7) + (7 \times 6) + (14 \times 4)$
- Capacity of Fleet 1 = $105 + 42 + 56 = 203$ units per journey.

3. **Calculate the total quantity of water transported**:
- Fleet 1 made 36 journeys.
- Total Quantity = Capacity of Fleet 1 × Journeys = 203×36 total units.

4. **Calculate the capacity of Fleet 2 per journey**:
- Fleet 2: 12L, 14M, 21S.
- Capacity of Fleet 2 = $(12 \times 7) + (14 \times 6) + (21 \times 4)$
- Capacity of Fleet 2 = $84 + 84 + 84 = 3 \times 84 = 252$ units per journey.

5. **Calculate the number of journeys for Fleet 2**:
- Journeys for Fleet 2 = $\frac{\text{Total Quantity}}{\text{Capacity of Fleet 2}}$
- Journeys for Fleet 2 = $\frac{203 \times 36}{252}$
- We can simplify this: $252 = 7 \times 36$.
- Journeys for Fleet 2 = $\frac{203 \times 36}{7 \times 36} = \frac{203}{7} = 29$.

Step 4: Final Answer:
The second fleet would need 29 journeys.

black

Quick Tip

When dealing with ratios like $L = \frac{7}{4}S$ and $M = \frac{3}{2}S$, find a common denominator (4 in this case) and set the base unit (S) to that value to work with integers. If S=4, then L=7 and M=6. This makes the capacity calculations much easier and less prone to error.

26. The age of the father 5 years ago was 5 times the age of his son. At present the father's age is 3 times that of his son. What is the present age of the father?

(A) 33 years
(B) 30 years
(C) 45 years
(D) None of these

Correct Answer: (B) 30 years

Solution:

Step 1: Understanding the Concept:
This is a classic word problem involving ages. We need to set up a system of two linear equations with two variables (father's age and son's age) based on the two conditions provided.

Step 2: Key Formula or Approach:
1. Define variables for the present ages. Let F be the father's present age and S be the son's present age.
2. Translate the statements into algebraic equations.
- At present the father's age is 3 times that of his son: $F = 3S$.
- 5 years ago: Ages were (F-5) and (S-5).
- father's age was 5 times the age of his son: $(F - 5) = 5(S - 5)$.
3. Solve the system of equations.

Step 3: Detailed Explanation:
1. **Set up the equations**:
- Equation 1 (Present): $F = 3S$
- Equation 2 (5 years ago): $F - 5 = 5(S - 5)$

2. **Solve the system**:
- Substitute the expression for F from Equation 1 into Equation 2.
- $(3S) - 5 = 5(S - 5)$
- $3S - 5 = 5S - 25$
- Move the terms with S to one side and constants to the other.
- $25 - 5 = 5S - 3S$
- $20 = 2S$
- $S = 10$. So, the son's present age is 10 years.

3. **Find the father's present age**:
- Use Equation 1: $F = 3S$.
- $F = 3 \times 10 = 30$.
- The father's present age is 30 years.

4. **Verification**:
- Present: Father=30, Son=10. (30 = 3 10, correct).

- 5 years ago: Father=25, Son=5. (25 = 5 5, correct).

Step 4: Final Answer:
The present age of the father is 30 years.

black

> Quick Tip
>
> For age problems, creating a small table with columns for 'Person', 'Present Age', and 'Age at other time' can help organize the information and prevent mistakes. Always double-check your final answer by plugging the values back into the original statements.

---

27. The probability that a contractor will get a plumbing contract is 2/3 and the probability that he will not get an electric contract is 5/9. If the probability of getting at least one contract is 4/5, what is the probability that he will get both?

(A) 31/45
(B) 8/45
(C) 14/45
(D) None of these

Correct Answer: (C) 14/45

Solution:

Step 1: Understanding the Concept:
This problem involves the basic principles of probability for two events, including the concepts of complementary events and the union of events.

Step 2: Key Formula or Approach:
Let A be the event of getting the plumbing contract and B be the event of getting the electric contract.
- Probability of a complementary event: $P(B') = 1 - P(B)$.
- Probability of the union of two events (getting at least one): $P(A \cup B) = P(A) + P(B) - P(A \cap B)$.
- We need to find the probability of getting both, which is $P(A \cap B)$.

Step 3: Detailed Explanation:
1. **List the given probabilities**:
- Probability of getting a plumbing contract: $P(A) = \frac{2}{3}$.
- Probability of NOT getting an electric contract: $P(B') = \frac{5}{9}$.
- Probability of getting at least one contract: $P(A \cup B) = \frac{4}{5}$.

2. **Find the probability of getting the electric contract, P(B)**:
- $P(B) = 1 - P(B') = 1 - \frac{5}{9} = \frac{9-5}{9} = \frac{4}{9}$.

3. **Use the formula for the union of events to find P(A B)**:
- $P(A \cup B) = P(A) + P(B) - P(A \cap B)$.
- Rearrange the formula to solve for $P(A \cap B)$:
- $P(A \cap B) = P(A) + P(B) - P(A \cup B)$.

4. **Substitute the known values**:
- $P(A \cap B) = \frac{2}{3} + \frac{4}{9} - \frac{4}{5}$.
- To add/subtract these fractions, find a common denominator. The LCM of 3, 9, and 5 is 45.
- $P(A \cap B) = \frac{2\times15}{3\times15} + \frac{4\times5}{9\times5} - \frac{4\times9}{5\times9}$
- $P(A \cap B) = \frac{30}{45} + \frac{20}{45} - \frac{36}{45}$
- $P(A \cap B) = \frac{30+20-36}{45} = \frac{50-36}{45} = \frac{14}{45}$.

Step 4: Final Answer:
The probability that the contractor will get both contracts is $\frac{14}{45}$.

black

Quick Tip

The phrase at least one is a keyword for the union of events ($A \cup B$). The phrase both is a keyword for the intersection of events ($A \cap B$). Remember the key formula connecting these two concepts.

---

28. A candidate is selected for interview for three posts. For the first post there are 5 candidates, for the second there are 8 and for the third there are 7. What are the chances for his getting at least one post?

(A) 1/x (unclear)
(B) 3/5
(C) 2/5
(D) 4/5

Correct Answer: (C) 2/5

Solution:

Step 1: Understanding the Concept:
The problem asks for the probability of getting at least one of three independent events. It's often easier to calculate this by finding the probability of the complementary event (getting none of the posts) and subtracting it from 1.

Step 2: Key Formula or Approach:
For independent events A, B, and C:
- P(A and B and C) = P(A) × P(B) × P(C).
- P(at least one post) = 1 - P(no posts).
- P(no posts) = P(not getting post 1) × P(not getting post 2) × P(not getting post 3).

Step 3: Detailed Explanation:
1. **Calculate the probability of not getting each post**:
- For Post 1, there are 5 candidates. The probability of this candidate being selected is 1/5. - Probability of NOT getting Post 1 = $1 - \frac{1}{5} = \frac{4}{5}$.
- For Post 2, there are 8 candidates. The probability of being selected is 1/8. - Probability of NOT getting Post 2 = $1 - \frac{1}{8} = \frac{7}{8}$.
- For Post 3, there are 7 candidates. The probability of being selected is 1/7. - Probability of NOT getting Post 3 = $1 - \frac{1}{7} = \frac{6}{7}$.

2. **Calculate the probability of getting none of the posts**:
- Since the selections for the posts are independent events, we multiply their probabilities.
- P(no posts) = P(not post 1) × P(not post 2) × P(not post 3)
- P(no posts) = $\frac{4}{5} \times \frac{7}{8} \times \frac{6}{7}$.
- We can cancel the 7 in the numerator and denominator.
- P(no posts) = $\frac{4 \times 6}{5 \times 8} = \frac{24}{40}$.
- Simplifying the fraction gives $\frac{24 \div 8}{40 \div 8} = \frac{3}{5}$.

3. **Calculate the probability of getting at least one post**:
- P(at least one post) = 1 - P(no posts)
- P(at least one post) = $1 - \frac{3}{5} = \frac{2}{5}$.

Step 4: Final Answer:
The chances for the candidate getting at least one post are $\frac{2}{5}$.

black

Quick Tip

Whenever you see the phrase at least one in a probability question, immediately consider using the complement rule: P(At least one) = 1 - P(None). This approach is almost always simpler and faster than calculating the probabilities of getting exactly one, exactly two, and exactly three posts and adding them up.

---

29. The number of ways in which a committee of 3 ladies and 4 gentlemen can be appointed out of 8 ladies and 7 gentlemen, if Mrs. X refuses to serve in a committee of which Mr. Y is a member, is

(A) 1,540
(B) 1,960

(C) 3,240
(D) None of these

Correct Answer: (A) 1,540

Solution:

Step 1: Understanding the Concept:
This is a problem in combinatorics involving a restrictive condition. The easiest way to solve such problems is often by calculating the total number of combinations without the restriction and then subtracting the number of combinations where the forbidden condition occurs. An alternative is to consider all valid cases separately.

Step 2: Key Formula or Approach:
The number of ways to choose 'r' items from a set of 'n' is given by the combination formula: $C(n, r) = \frac{n!}{r!(n-r)!}$.
Method 1: Total ways - Forbidden ways.
Method 2: Sum of all allowed cases.

Step 3: Detailed Explanation (Method 1: Subtraction):
1. **Calculate total possible committees without any restrictions**:
- Ways to choose 3 ladies from 8: $C(8, 3) = \frac{8\times7\times6}{3\times2\times1} = 56$.
- Ways to choose 4 gentlemen from 7: $C(7, 4) = C(7, 3) = \frac{7\times6\times5}{3\times2\times1} = 35$.
- Total unrestricted committees $= 56 \times 35 = 1960$.

2. **Calculate the number of forbidden committees (where Mrs. X and Mr. Y are both present)**:
- If Mrs. X is on the committee, we must choose her (1 way). We need 2 more ladies from the remaining 7. - Ways to choose 2 more ladies $= C(7, 2) = \frac{7\times6}{2} = 21$.
- If Mr. Y is on the committee, we must choose him (1 way). We need 3 more gentlemen from the remaining 6. - Ways to choose 3 more gentlemen $= C(6, 3) = \frac{6\times5\times4}{3\times2\times1} = 20$.
- Number of committees with both Mrs. X and Mr. Y $= 21 \times 20 = 420$.

3. **Calculate the number of allowed committees**:
- Allowed ways = Total ways - Forbidden ways $= 1960 - 420 = 1540$.

Alternative Explanation (Method 2: Casework):
We consider the valid cases based on Mrs. X's participation.
1. **Case 1: Mrs. X is IN the committee**.
- This means Mr. Y must NOT be in the committee.
- Choose Mrs. X (1 way). Choose 2 other ladies from the remaining 7: $C(7, 2) = 21$ ways.
- Choose 4 gentlemen from the 6 available (excluding Mr. Y): $C(6, 4) = C(6, 2) = \frac{6\times5}{2} = 15$ ways.
- Total ways for Case 1 $= 21 \times 15 = 315$.
2. **Case 2: Mrs. X is NOT in the committee**.
- There are no restrictions on Mr. Y.

- Choose 3 ladies from the remaining 7 (excluding Mrs. X): $C(7,3) = 35$ ways.
- Choose 4 gentlemen from all 7 available: $C(7,4) = 35$ ways.
- Total ways for Case 2 = $35 \times 35 = 1225$.
3. **Total allowed committees** = Case 1 + Case 2 = $315 + 1225 = 1540$.

Step 4: Final Answer:
The number of ways to form the committee is 1,540.

black

> **Quick Tip**
>
> For at least, at most, or if-then restriction problems in combinations, both the subtraction method (Total - Forbidden) and the casework method are effective. Choose the one that seems to involve fewer calculations. Often, the subtraction method is quicker.

---

30. A bus starts from city X. The number of women in the bus is half of the number of men. In city Y, 10 men leave the bus and five women enter. Now the number of men and women is equal. In the beginning, how many passengers entered the bus?

(A) 15
(B) 30
(C) 36
(D) 45

Correct Answer: (D) 45

Solution:

Step 1: Understanding the Concept:
This is a word problem that can be translated into a system of two linear equations with two variables. We need to define variables for the initial number of men and women and form equations based on the given conditions.

Step 2: Key Formula or Approach:
1. Let M be the initial number of men and W be the initial number of women.
2. Formulate equations from the problem statement.
- number of women... is half of the number of men: $W = \frac{M}{2}$.
- After changes at city Y, numbers are equal: $(M - 10) = (W + 5)$.
3. Solve the system of equations to find M and W.
4. Calculate the initial total number of passengers (M + W).

Step 3: Detailed Explanation:
1. **Set up the initial equations**:

- Equation 1: $W = \frac{M}{2} \implies M = 2W$.
- Equation 2: After the stop at city Y, the number of men is $M - 10$ and the number of women is $W + 5$. These are now equal.
$M - 10 = W + 5$.

2. **Solve the system of equations**:
- We have a simple system to solve. Substitute the expression for M from Equation 1 into Equation 2.
- $(2W) - 10 = W + 5$.
- Rearrange the terms to solve for W.
- $2W - W = 5 + 10$.
- $W = 15$. So, there were initially 15 women on the bus.

3. **Find the initial number of men**:
- Using Equation 1: $M = 2W = 2 \times 15 = 30$.
- Initially, there were 30 men on the bus.

4. **Calculate the total number of passengers in the beginning**:
- The question asks for the total number of passengers who entered the bus at the start.
- Total Passengers = Initial Men + Initial Women = $M + W$.
- Total Passengers = $30 + 15 = 45$.

Step 4: Final Answer:
In the beginning, 45 passengers entered the bus.

black

Quick Tip

Always read the question carefully to ensure you are solving for the correct value. Here, the question asks for the total initial passengers (M+W), not just the number of men or women. After finding M=30 and W=15, it's easy to mistakenly select 30 as the answer if you are not careful.

---

31. Balls are arranged in rows to form an equilateral triangle (1 in the first row, 2 in the second, and so on). If 669 more balls are added, all the balls can be arranged in a square and each side of the square contains 8 balls fewer than the number of balls on a side of the triangle. What was the initial number of balls?

(A) 1600
(B) 1500
(C) 1540
(D) 1690

Correct Answer: (C) 1540

Solution:

Step 1: Understanding the Concept:
The initial arrangement of balls is in an equilateral triangle, which means the total number of balls is a triangular number. A triangular number T_n for 'n' rows (or 'n' balls on a side) is the sum of the first 'n' natural numbers. After adding more balls, the new total forms a perfect square. This information allows us to set up an algebraic equation.

Step 2: Key Formula or Approach:
1. The total number of balls in a triangular arrangement with 'n' balls on a side is the n-th triangular number: $T_n = \frac{n(n+1)}{2}$.
2. The number of balls in a square arrangement with 's' balls on a side is s^2.
3. According to the problem, the side of the square 's' is related to the side of the triangle 'n' by: $s = n - 8$.
4. The main equation is: (Initial Balls) + 669 = (Final Balls) $\implies T_n + 669 = s^2$.

Step 3: Detailed Explanation:
1. **Set up the equation using the variables n and s**:

$$\frac{n(n+1)}{2} + 669 = (n-8)^2$$

2. **Solve the equation for n**:
- Expand both sides of the equation.

$$\frac{n^2+n}{2} + 669 = n^2 - 16n + 64$$

- Multiply the entire equation by 2 to eliminate the fraction.

$$n^2 + n + 1338 = 2n^2 - 32n + 128$$

- Rearrange the terms to form a standard quadratic equation ($ax^2 + bx + c = 0$).

$$(2n^2 - n^2) + (-32n - n) + (128 - 1338) = 0$$

$$n^2 - 33n - 1210 = 0$$

- We can solve this quadratic equation by factoring or using the quadratic formula. Let's try factoring. We need two numbers that multiply to -1210 and add to -33. These numbers are -55 and 22.

$$(n-55)(n+22) = 0$$

- The possible values for n are $n = 55$ or $n = -22$. Since 'n' represents the number of rows, it must be a positive integer.
- Therefore, $n = 55$. The triangle had 55 balls on its side.

3. **Calculate the initial number of balls**:
- The initial number of balls is T_{55}.

$$T_{55} = \frac{55(55+1)}{2} = \frac{55 \times 56}{2} = 55 \times 28$$

$$T_{55} = 1540$$

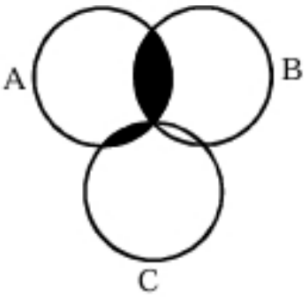
Step 4: Final Answer:
The initial number of balls was 1540.

black

> **Quick Tip**
>
> To verify the answer, check if the conditions are met. Initial balls = 1540. Final balls = 1540 + 669 = 2209. The side of the square is $\sqrt{2209} = 47$. The side of the triangle was n=55. The side of the square (47) is indeed 8 less than the side of the triangle (55). The answer is correct.

---

32. The shaded region in the following Venn Diagram represents:



(A) A ∪ (B ∩ C)
(B) A ∩ (B ∪ C)
(C) A ∩ (B' ∩ C)
(D) None of these

Correct Answer: (B) A ∩ (B ∪ C)

Solution:

Step 1: Understanding the Concept:
The question asks to describe the shaded area in a Venn diagram using set notation. We need to analyze which regions defined by the sets A, B, and C are included in the shaded part.

Step 2: Key Formula or Approach:
- The symbol ∩ (intersection) represents the AND condition, meaning elements must be in both sets.
- The symbol ∪ (union) represents the OR condition, meaning elements can be in either set (or both).
- We can describe the shaded region by observing its components.

Step 3: Detailed Explanation:
1. **Analyze the shaded region**: The shaded area consists of two parts:
- The region where set A and set B overlap (A ∩ B).

- The region where set A and set C overlap ($A \cap C$).
2. **Combine the components**: The total shaded region is the union (OR) of these two parts.
- Shaded Region = $(A \cap B) \cup (A \cap C)$.
3. **Apply the distributive law of sets**: The expression $(A \cap B) \cup (A \cap C)$ is equivalent to $A \cap (B \cup C)$.
- This can be read as the elements that are in A AND are also in either B OR C.
- Let's verify this interpretation with the diagram. The shading covers all parts of A that overlap with the combined area of B and C. This matches the description $A \cap (B \cup C)$.

4. **Evaluate the given options**:
- (A) $A \cup (B \cap C)$: This would be the entire circle A, plus the small area where B and C overlap. This is incorrect.
- (B) $A \cap (B \cup C)$: This matches our derived expression. This is correct.
- (C) $A \cap (B' \cap C)$: This represents the area that is in A and C, but not in B. This is only a portion of the shaded area. This is incorrect.

Step 4: Final Answer:
The shaded region in the Venn Diagram represents $A \cap (B \cup C)$.

black

Quick Tip

When analyzing Venn diagrams, break down the shaded region into its simplest overlapping parts first. Then, use union to combine these parts. Finally, see if you can simplify the resulting set expression using laws like the distributive law.

Directions for questions 33 to 36: The following table gives details of leading openers' performance in 20 One-day cricket matches.

Details of Leading Openers' Performance in 20 One-day cricket matches					
2*Openers	2*Total Runs	2*Highest Runs	No. of matches with runs		
			100 or more	50-99	0's
A	994	141	5	3	1
B	751	130	1	8	2
C	414	52	-	2	2
D	653	94	-	4	1
E	772	85	-	7	-

33. What is the difference between the average runs of top two openers in terms of highest runs, if matches having 0's were ignored?

(A) 11.1
(B) 13.7
(C) 4.7
(D) None of these

Correct Answer: (B) 13.7

Solution:

Step 1: Understanding the Concept:
The question asks for a calculation based on data from the table. There is a slight ambiguity in the phrase top two openers in terms of highest runs.
This could mean the two with the highest Highest Runs scores (A and B) or the two with the highest Total Runs (A and E). We will test the more plausible interpretation that it refers to Total Runs, as highest runs could be a single fluke performance. The symbol '-' in the table is assumed to mean zero occurrences.

Step 2: Key Formula or Approach:
1. Identify the top two openers based on Total Runs.
2. For each of these two openers, calculate their average score, excluding matches where they scored 0.
- New Average $= \frac{\text{Total Runs}}{20-(\text{Number of 0's})}$.
3. Find the difference between these two new averages.

Step 3: Detailed Explanation:
1. **Identify the top two openers by Total Runs**:
- A: 994 runs
- E: 772 runs
- The top two are A and E.

2. **Calculate the average for opener A (ignoring 0's)**:
- Total Runs for A = 994.
- Number of 0's for A = 1.
- Number of innings to consider $= 20 - 1 = 19$.
- Average for A $= \frac{994}{19} \approx 52.316$.

3. **Calculate the average for opener E (ignoring 0's)**:
- Total Runs for E = 772.
- Number of 0's for E = 0 (since the table has a '-').
- Number of innings to consider $= 20 - 0 = 20$.
- Average for E $= \frac{772}{20} = 38.6$.
-
4. **Find the difference between the averages**: - Difference = Average(A) - Average(E) $= 52.316 - 38.6 = 13.716$.
Step 4: Final Answer:
The difference is approximately 13.7, which matches option (B). The interpretation of top two openers as those with the highest total runs appears to be correct.

black

Quick Tip

In data interpretation questions, be wary of ambiguous phrases. If your initial interpretation leads to an answer not in the options, consider alternative interpretations. Here, top two openers in terms of highest runs was more likely intended to mean top two openers [ranked by total runs]..., a common way to rank players.

---

34. If matches having zero runs and the one with highest runs is ignored, what will be the average runs for opener C?

(A) 20.7
(B) 21.79
(C) 21.29
(D) 21.17

Correct Answer: (C) 21.29

Solution:

Step 1: Understanding the Concept:
We need to calculate a new average for opener C by excluding specific innings from the total. We will adjust both the total number of runs and the total number of matches considered.

Step 2: Key Formula or Approach:
- New Total Runs = Original Total Runs - Highest Runs score. - New Number of Matches = 20 - (Number of 0's) - 1 (for the highest score match). - New Average = $\frac{\text{New Total Runs}}{\text{New Number of Matches}}$.

Step 3: Detailed Explanation:
1. **Get the data for opener C**: - Total Runs = 414. - Highest Runs = 52. - Number of 0's = 2. - Total Matches = 20.
2. **Calculate the adjusted number of runs**: - We ignore the runs from the highest scoring match. - New Total Runs = $414 - 52 = 362$.
3. **Calculate the adjusted number of matches**: - We ignore the matches with zero runs (2 matches) and the single match with the highest score (1 match). - Total matches to ignore = $2 + 1 = 3$. - New Number of Matches = $20 - 3 = 17$.
4. **Calculate the new average**: - New Average = $\frac{362}{17}$. - $362 \div 17 \approx 21.2941...$
Step 4: Final Answer:
The new average for opener C is approximately 21.29.

black

Quick Tip

When adjusting an average, remember to modify both the numerator (the sum of values) and the denominator (the count of values). A common mistake is to only adjust one or the other.

---

35. By how much does the difference between the two highest total runs differ from the difference between the two lowest total runs?

(A) More by 4
(B) More by 18
(C) Lower by 18
(D) None of these

Correct Answer: (D) None of these

Solution:

Step 1: Understanding the Concept:
The question asks for a comparison between two calculated differences. We first need to find the difference between the top two scores and the difference between the bottom two scores, and then find the difference between these two results.

Step 2: Key Formula or Approach:
1. Rank the openers by Total Runs. 2. Calculate Diff_high = (Highest Total Runs) - (Second Highest Total Runs). 3. Calculate Diff_low = (Second Lowest Total Runs) - (Lowest Total Runs). 4. Find the difference: —Diff_high - Diff_low—.

Step 3: Detailed Explanation:
1. **Rank the openers by Total Runs**: - A: 994 (Highest) - E: 772 (Second Highest) - B: 751 - D: 653 (Second Lowest) - C: 414 (Lowest)
2. **Calculate the difference between the two highest total runs**: - Diff_high = Runs(A) - Runs(E) = $994 - 772 = 222$.
3. **Calculate the difference between the two lowest total runs**: - Diff_low = Runs(D) - Runs(C) = $653 - 414 = 239$.
4. **Compare the two differences**: - The question asks how Diff_high differs from Diff_low. - Difference = $239 - 222 = 17$. - Diff_high (222) is 17 lower than Diff_low (239).
5. **Check the options**: - The calculated difference is 17. The closest option is Lower by 18. Given the discrepancy, the data in the question might have a small error. However, based on the numbers provided, 17 is the correct answer, which is not listed.
Step 4: Final Answer:
The difference between the two differences is 17. Since this is not an option, the correct choice is (D) None of these. (Note: It is possible there is a typo in the question's data and option (C) was the intended answer, as 17 is very close to 18).

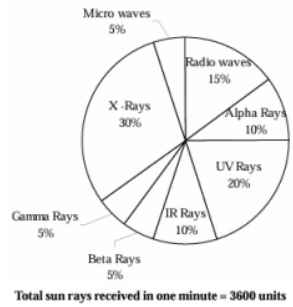
black

Quick Tip

In Data Interpretation, always perform calculations precisely. If your result does not match any option, double-check your arithmetic. If the calculation is correct, the answer is likely None of these or the question data is flawed.

---

36. Which of the given pairs of openers have ratio 5 : 2 in their highest runs?



(A) A and B
(B) B and C
(C) A and D
(D) D and C

Correct Answer: (B) B and C

Solution:

Step 1: Understanding the Concept:
We need to check the ratio of the Highest Runs for each pair of openers given in the options and see which one simplifies to 5 : 2.

Step 2: Key Formula or Approach:
For each pair (X, Y), calculate the ratio of their highest runs: Runs(X) : Runs(Y). Simplify the ratio by dividing by the greatest common divisor.

Step 3: Detailed Explanation:
1. **List the Highest Runs for each opener**: - A: 141 - B: 130 - C: 52 - D: 94
2. **Check the ratio for each option**: - (A) A and B: Ratio is 141 : 130. This cannot be simplified to 5 : 2. - (B) B and C: Ratio is 130 : 52. Let's find the greatest common divisor (GCD). Both are divisible by 2, giving 65 : 26. Both are divisible by 13, giving 5 : 2. So, the GCD is 26.

$$\frac{130}{52} = \frac{130 \div 26}{52 \div 26} = \frac{5}{2}$$

This ratio matches 5 : 2. - (C) A and D: Ratio is 141 : 94. 141 is divisible by 3 (sum of digits is 6). 94 is divisible by 2. No obvious common factor that would lead to 5 : 2. - (D) D and C: Ratio is 94 : 52. Simplifying by dividing by 2 gives 47 : 26. This cannot be simplified further.

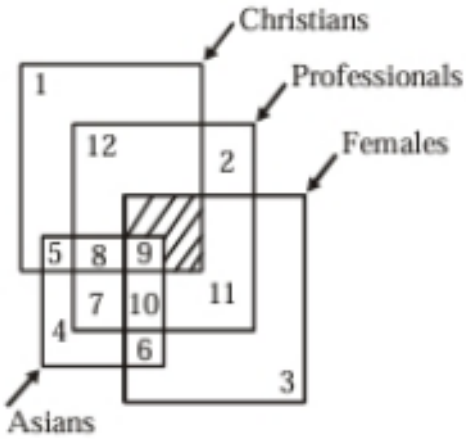
Step 4: Final Answer:
The pair of openers B and C have a ratio of $5:2$ in their highest runs.

black

Quick Tip

When checking ratios, you can quickly test the relationship by cross-multiplication. For a ratio to be $5:2$, the first number times 2 should equal the second number times 5. For option (B): Is $130 \times 2 = 52 \times 5$? Yes, $260 = 260$. This is a fast way to verify.

Directions for questions 37 to 40: The following pie chart shows the percentage of different types of sun rays received in one minute, which total to 3600 units.



37. If the human body can withstand a maximum of 9720 units of IR rays when exposed to the sun continuously, then what is the maximum time in minutes that any person could stand in the sun without crossing the threshold limit of IR rays?

(A) 23
(B) 19
(C) 27
(D) 29

Correct Answer: (C) 27

Solution:

Step 1: Understanding the Concept:
We need to find the rate at which IR rays are received and then use this rate to determine how long it takes to reach a given total amount.

Step 2: Key Formula or Approach:
1. IR Rays per minute = (Percentage of IR rays) $\times$ (Total units per minute). 2. Maximum

Time = $\frac{\text{Total withstandable units}}{\text{IR Rays per minute}}$.

Step 3: Detailed Explanation:
1. **Calculate the units of IR rays received per minute**: - From the pie chart, IR rays constitute 10% of the total. - Total units per minute = 3600. - IR units per minute = 10% of $3600 = 0.10 \times 3600 = 360$ units.
2. **Calculate the maximum exposure time**: - The maximum amount of IR rays the body can withstand is 9720 units. - Maximum time = $\frac{9720 \text{ units}}{360 \text{ units/minute}}$. - Maximum time = $\frac{972}{36}$ minutes. - Performing the division: $972 \div 36 = 27$.
Step 4: Final Answer:
The maximum time a person could stand in the sun is 27 minutes.

black

> Quick Tip
>
> In data interpretation problems, calculate the base rates first (like units per minute for each category). This will make subsequent calculations for different time periods or total amounts much faster.

---

38. The amount of Beta rays in 10 minutes of the sun's rays is how many times the amount of IR rays in 3 minutes of the sun's rays?

(A) 1.44
(B) 1.33
(C) 1.66
(D) 1.55

Correct Answer: (C) 1.66

Solution:

Step 1: Understanding the Concept:
This problem requires us to calculate two separate quantities based on the pie chart data and different time durations, and then find the ratio between them.

Step 2: Key Formula or Approach:
1. Amount = (Rate per minute) × (Time in minutes). 2. Ratio = $\frac{\text{Amount of Beta rays in 10 min}}{\text{Amount of IR rays in 3 min}}$.

Step 3: Detailed Explanation:
1. **Calculate the amount of Beta rays in 10 minutes**:
- From the chart, Beta rays = 5% of total.
- Rate of Beta rays = 5% of $3600 = 0.05 \times 3600 = 180$ units/minute.
- Amount in 10 minutes = 180 units/min × 10 min = 1800 units.

2. **Calculate the amount of IR rays in 3 minutes**:
- From the chart, IR rays = 10% of total.
- Rate of IR rays = 10% of 3600 = $0.10 \times 3600 = 360$ units/minute.
- Amount in 3 minutes = 360 units/min $\times$ 3 min = 1080 units.

3. **Find the required ratio**:
- Ratio = $\frac{1800}{1080}$.
- Simplify the fraction: $\frac{180}{108} = \frac{90}{54} = \frac{45}{27} = \frac{5}{3}$.
- Convert the fraction to a decimal: $\frac{5}{3} \approx 1.666...$

Step 4: Final Answer:
The ratio is approximately 1.66.

black

> **Quick Tip**
>
> You can also solve this using ratios directly without calculating the absolute amounts. The ratio of rates (Beta:IR) is 5%:10% or 1:2. The question asks for the ratio of (Rate_Beta 10) to (Rate_IR 3). This is $(1 \times 10) : (2 \times 3) = 10 : 6 = 5 : 3$, which is 1.66.

---

39. How many minutes of exposure to the sun in a day would be enough to ensure that the body receives enough Vitamin D, given that the body requires 40 units of Vitamin D every day and that 30 units of Beta rays generate one unit of Vitamin D?

(A) $5\frac{1}{3}$
(B) $5\frac{2}{3}$
(C) $6\frac{1}{4}$
(D) $6\frac{2}{3}$

Correct Answer: (D) $6\frac{2}{3}$

Solution:

Step 1: Understanding the Concept:
This is a multi-step problem. We first need to determine the total quantity of Beta rays required. Then, using the rate of Beta ray reception from the pie chart, we can calculate the total time needed.

Step 2: Key Formula or Approach:
1. Total Beta rays needed = (Vitamin D units needed) $\times$ (Beta rays per Vitamin D unit). 2. Time required = $\frac{\text{Total Beta rays needed}}{\text{Rate of Beta rays per minute}}$.

Step 3: Detailed Explanation:
1. **Calculate the total amount of Beta rays required per day**: - Vitamin D required = 40 units. - Beta rays per unit of Vitamin D = 30 units. - Total Beta rays needed = $40 \times 30 = 1200$ units.
2. **Calculate the rate of Beta ray reception**: - From the chart, Beta rays = 5% of total. - Rate of Beta rays = 5% of 3600 units/min = $0.05 \times 3600 = 180$ units/minute.
3. **Calculate the required exposure time in minutes**: - Time = $\frac{\text{Total Beta rays needed}}{\text{Rate per minute}} = \frac{1200}{180}$. - Simplify the fraction: $\frac{120}{18} = \frac{20}{3}$. - Convert the improper fraction to a mixed number: $\frac{20}{3} = 6\frac{2}{3}$ minutes.
Step 4: Final Answer:
The required exposure time is $6\frac{2}{3}$ minutes.

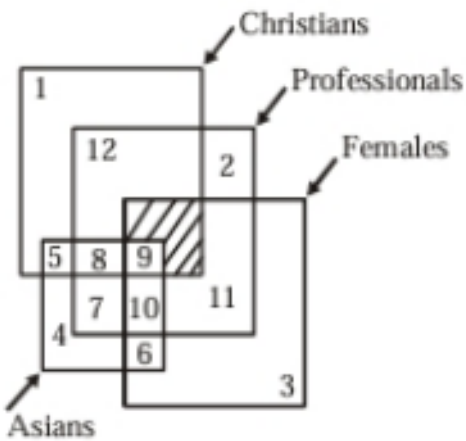
black

Quick Tip

Break down word problems into smaller, manageable steps. First, find the target quantity (total Beta rays). Second, find the rate of supply (Beta rays per minute). Finally, divide the target by the rate to find the time.

---

40. The amount of Alpha rays received in two minutes is how much more/less than the amount of Radio waves received in four minutes?



(A) 1320 units more
(B) 1200 units less
(C) 1440 units less
(D) 1600 units more

Correct Answer: (C) 1440 units less

Solution:

Step 1: Understanding the Concept:
We need to calculate the total units for two different types of rays over different time periods and then find the difference between them.

Step 2: Key Formula or Approach:
1. Amount = (Rate per minute) $\times$ (Time in minutes). 2. Difference = Amount(Alpha rays) - Amount(Radio waves).

Step 3: Detailed Explanation:
1. **Calculate the amount of Alpha rays in two minutes**: - From the chart, Alpha rays = 10%. - Rate of Alpha rays = 10% of 3600 = $0.10 \times 3600 = 360$ units/minute. - Amount in 2 minutes = $360 \times 2 = 720$ units.
2. **Calculate the amount of Radio waves in four minutes**: - From the chart, Radio waves = 15%. - Rate of Radio waves = 15% of 3600 = $0.15 \times 3600 = 540$ units/minute. - Amount in 4 minutes = $540 \times 4 = 2160$ units.
3. **Find the difference**:
- Difference = Amount(Alpha) - Amount(Radio) = $720 - 2160 = -1440$ units.
- The negative sign indicates that the amount of Alpha rays is less than the amount of Radio waves.

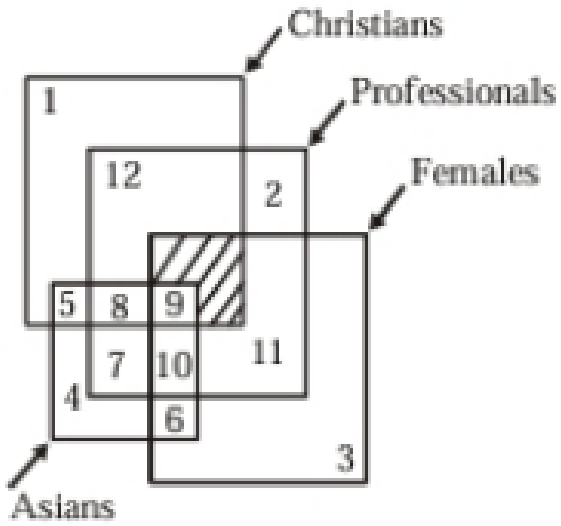
Step 4: Final Answer:
The amount of Alpha rays received in two minutes is 1440 units less than the amount of Radio waves received in four minutes.

black

Quick Tip

Pay close attention to the wording more/less than. Calculate the difference A - B. If the result is positive, A is more than B. If the result is negative, A is less than B.

Directions for questions 41 to 44: The questions are based on the 4-set diagram with sets: Christians (C), Professionals (P), Females (F), Asians (A).



Note on Interpretation: This is a non-standard Venn diagram. Based on analysis that yields consistent answers for the set of questions, the sets are interpreted as follows: - **Christians (C)**: The area within the large top boundary = 1, 12, 2, 5, 8, 9, 11 - **Professionals (P)**: The area within the inner rectangle boundary = 12, 8, 9, 10, 11 - **Females (F)**: The area within the tilted square boundary = 2, 5, 6, 7, 8, 9, 10, 11 - **Asians (A)**: The area within the large bottom boundary = 3, 4, 5, 6, 7, 9, 10

41. Asian Non-Christian females who are Professionals are represented by (based on the 4-set diagram with sets: Christians (C), Professionals (P), Females (F), Asians (A)).

(A) 3
(B) 10
(C) 8
(D) 11

Correct Answer: (B) 10

Solution:

Step 1: Understanding the Concept:
We need to find the region number that satisfies four conditions simultaneously: being Asian (A), being Female (F), being a Professional (P), and NOT being a Christian (C'). This corresponds to the set intersection A ∩ F ∩ P ∩ C'.

Step 2: Key Formula or Approach:
1. Identify the set of regions for A, F, and P.
2. Find the intersection of these three sets (A ∩ F ∩ P). 3. Identify the set of regions for C.
4. From the intersection found in step 2, remove any regions that are also in C.

Step 3: Detailed Explanation:
1. **Find the intersection of Asian, Female, and Professional (A ∩ F ∩ P)**:
- A = 3, 4, 5, 6, 7, 9, 10

- F = 2, 5, 6, 7, 8, 9, 10, 11
- P = 12, 8, 9, 10, 11
- First, find A ∩ F = 5, 6, 7, 9, 10.
- Now, find (A ∩ F) ∩ P = 9, 10.
- The regions representing people who are Asian, Female, and Professional are 9, 10.

2. **Apply the Non-Christian condition**:
- C = 1, 12, 2, 5, 8, 9, 11.
- We must find the regions from 9, 10 that are NOT in C.
- Region 9 is in C, so we exclude it.
- Region 10 is NOT in C.
- Therefore, the required region is 10.

Step 4: Final Answer:
The region representing Asian Non-Christian females who are Professionals is 10.

black

Quick Tip

For complex Venn diagrams, methodically list the elements (region numbers) of each set first. Then perform the intersections and exclusions step-by-step to avoid confusion.

---

42. Asian females who are neither professional nor Christians are denoted by

(A) 6
(B) 9
(C) 10
(D) 3

Correct Answer: (A) 6

Solution:

Step 1: Understanding the Concept:
We need to find the region number representing people who are Asian (A) AND Female (F), but are NOT Professional (P') AND NOT Christian (C'). This corresponds to the set (A ∩ F) ∩ P' ∩ C'.

Step 2: Key Formula or Approach:
1. Find the intersection of Asians and Females (A ∩ F). 2. Find the union of Professionals and Christians (P ∪ C). 3. The result is the set of regions in (A ∩ F) that are not in (P ∪ C).

Step 3: Detailed Explanation:
1. **Find the intersection of Asian and Female (A ∩ F)**: - A = 3, 4, 5, 6, 7, 9, 10 - F = 2, 5, 6, 7, 8, 9, 10, 11 - A ∩ F = 5, 6, 7, 9, 10.
2. **Find the regions for neither professional nor Christians**: - This means we must exclude any region that is in P or in C.
- P = 12, 8, 9, 10, 11
- C = 1, 12, 2, 5, 8, 9, 11
- We need to remove regions from 5, 6, 7, 9, 10 that are in P or C.
- Region 5 is in C. Exclude it.
- Region 9 is in both P and C. Exclude it.
- Region 10 is in P. Exclude it.
- We are left with regions 6, 7.
3. **Check the options**:
- The result contains regions 6 and 7. The options provided are single numbers. In such cases, it's common that one of the resulting regions is listed as an option. Option (A) is 6.

Step 4: Final Answer:
The region is denoted by 6. (And also 7, but 6 is the option provided).

black

Quick Tip

When the logic leads to multiple regions but the options are singular, re-read the question. If it asks what a group is denoted by, and one of your calculated regions is an option, it is the likely intended answer.

---

43. Non-Asian professional Christian male are represented by

(A) 10
(B) 11
(C) 12
(D) 9

Correct Answer: (C) 12

Solution:

Step 1: Understanding the Concept:
We need to find the region representing people who are Professional (P), Christian (C), NOT Asian (A'), and NOT Female (F', i.e., Male). This corresponds to the set P ∩ C ∩ A' ∩ F'.

Step 2: Key Formula or Approach:
1. Find the intersection of Professionals and Christians (P ∩ C). 2. From this set, remove any

regions that are in set A or set F.

Step 3: Detailed Explanation:
1. **Find the intersection of Professional and Christian (P ∩ C)**: - P = 12, 8, 9, 10, 11 - C = 1, 12, 2, 5, 8, 9, 11 - P ∩ C = 12, 8, 9, 11.
2. **Apply the Non-Asian and Male (Not Female) conditions**: - We must remove regions from 12, 8, 9, 11 that are in A or F. - A = 3, 4, 5, 6, 7, 9, 10 - F = 2, 5, 6, 7, 8, 9, 10, 11 - Region 8 is in F. Exclude it. - Region 9 is in both A and F. Exclude it. - Region 11 is in F. Exclude it. - We are left with region 12.
3. **Verify region 12**: - Is 12 in C? Yes. Is 12 in P? Yes. Is 12 in A? No. Is 12 in F? No. - It satisfies all conditions.
Step 4: Final Answer:
The region representing Non-Asian professional Christian males is 12.

black

> Quick Tip
>
> Male is the complement of Female (F'). The condition Non-Asian is the complement of Asian (A'). Use the process of elimination on the intersection of the primary categories.

---

44. Christian females who are non-professional and Asian are represented by

(A) 5
(B) 10
(C) 9
(D) None of these

Correct Answer: (A) 5

Solution:

Step 1: Understanding the Concept:
We need to find the region for people who are Christian (C), Female (F), Asian (A), and NOT Professional (P'). This corresponds to the set C ∩ F ∩ A ∩ P'.

Step 2: Key Formula or Approach:
1. Find the intersection of the three main sets (C ∩ F ∩ A). 2. From this resulting set, remove any regions that are also in set P.

Step 3: Detailed Explanation:
1. **Find the intersection of Christian, Female, and Asian (C ∩ F ∩ A)**:
- C = 1, 12, 2, 5, 8, 9, 11
- F = 2, 5, 6, 7, 8, 9, 10, 11
- A = 3, 4, 5, 6, 7, 9, 10

- First, find C ∩ F = 2, 5, 8, 9, 11.
- Now, find (C ∩ F) ∩ A = 5, 9.
- The regions for people who are Christian, Female, and Asian are 5, 9.

2. **Apply the Non-Professional condition**:
- We must find the regions from 5, 9 that are NOT in P.
- P = 12, 8, 9, 10, 11.
- Region 9 is in P. Exclude it.
- Region 5 is NOT in P.
- The required region is 5.

Step 4: Final Answer:
The region representing Christian females who are non-professional and Asian is 5.

black

> Quick Tip
>
> Always start with the positive conditions (intersections) to narrow down the possible regions. Apply the negative conditions (complements) at the end to filter the result.

---

45. INSIPID : PIQUANT :: (Select the pair that shows the same relationship as the capitalized pair)

(A) relish : spice
(B) tasty : bland
(C) sweet : dessert
(D) flat : spicy

Correct Answer: (D) flat : spicy

Solution:

Step 1: Understanding the Concept:
This is an analogy question. We need to identify the relationship between the words in the given pair and find another pair with the same relationship.

Step 2: Key Formula or Approach:
1. Define the words in the primary pair. 2. Characterize their relationship (e.g., synonym, antonym, cause-effect, part-whole). 3. Analyze the options to find a pair that fits the same relationship and order.

Step 3: Detailed Explanation:
1. **Analyze the primary pair**:

- **INSIPID**: Lacking flavor; dull, tasteless. (A negative connotation).
- **PIQUANT**: Having a pleasantly sharp taste or appetizing flavor; stimulating. (A positive/strong connotation).
- The relationship is that of **antonyms** (opposites), specifically related to taste and flavor. The order is Negative-to-Positive.

2. **Analyze the options**: - (A) relish : spice: To relish is to enjoy something greatly. A spice adds flavor. They are related but are not antonyms.
- (B) tasty : bland: Tasty means having a good flavor (positive). Bland means lacking flavor (negative). They are antonyms, but the order is Positive-to-Negative, which is the reverse of the primary pair.
- (C) sweet : dessert: A dessert is often sweet. This is a characteristic relationship, not one of opposites.
- (D) flat : spicy: Flat, in the context of taste, means lacking excitement or flavor, much like insipid (negative). Spicy means having the strong taste of spices (positive/strong). They are antonyms, and the order is Negative-to-Positive.

Step 4: Final Answer:
The pair 'flat : spicy' shares the same antonymous relationship and Negative-to-Positive order as 'insipid : piquant'.

black

Quick Tip

In analogy questions, pay close attention not only to the core relationship (like antonyms) but also to the order and connotation (Positive/Negative) of the words. This can help you decide between two seemingly correct options.

---

46. In a certain code, TERMINAL is written as SDQLJQBM. How is CREDIBLE written in that code?

(A) BQDCJCMF
(B) BQDCHAKD
(C) DSFEJCMF
(D) DSFEHAKD

Correct Answer: (A) BQDCJCMF

Solution:

Step 1: Understanding the Concept:
This is a coding-decoding problem where we need to decipher the pattern used to transform the word TERMINAL into SDQLJQBM and then apply the same pattern to the word CREDIBLE.

Step 2: Key Formula or Approach:
1. Divide the source word into parts if a single pattern doesn't apply to the whole word. 2. Analyze the relationship between the letters of the source word and the coded word, often by looking at their positions in the alphabet. 3. Apply the discovered pattern to the new word.

Step 3: Detailed Explanation:
1. **Analyze the coding of TERMINAL**:
- The word TERMINAL has 8 letters. Let's split it into two halves of 4 letters each: **TERM** and **INAL**.
- The coded word is SDQLJQBM. Let's split this as well: **SDQL** and **JQBM**.

2. **Decode the first half (TERM → SDQL)**:
- T (20) → S (19) : -1
- E (5) → D (4) : -1
- R (18) → Q (17) : -1
- M (13) → L (12) : -1
- The pattern for the first half is to subtract 1 from the alphabetical position of each letter.

3. **Decode the second half (INAL → JQBM)**:
- I (9) → J (10) : +1
- N (14) → Q (17) : +3. This seems to break the pattern.
- A (1) → B (2) : +1
- L (12) → M (13) : +1
- The letter 'Q' in the coded word appears to be an error in the question, as the other three letters in the second half follow a consistent '+1' pattern. Assuming the intended pattern was '+1' for the entire second half, N(14) should have been coded as O(15).
The most logical conclusion is to follow the pattern suggested by the majority of the letters.
- Assumed Pattern for second half: Add 1 to the alphabetical position of each letter.

4. **Apply the pattern to CREDIBLE**:
- Split the word into two halves: **CRED** and **IBLE**.
- **First half (CRED)**: Apply the '-1' rule.
- C - 1 → B
- R - 1 → Q
- E - 1 → D
- D - 1 → C
- Coded first half: **BQDC**.
- **Second half (IBLE)**: Apply the '+1' rule.
- I + 1 → J
- B + 1 → C
- L + 1 → M
- E + 1 → F
- Coded second half: **JCMF**.

5. **Combine the coded halves**:
- The full coded word is **BQDCJCMF**.

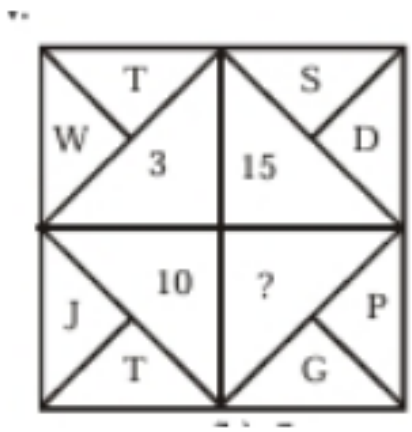
Step 4: Final Answer:
The word CREDIBLE is written as BQDCJCMF in that code.

black

> **Quick Tip**
>
> In coding questions, if a pattern is consistent for most of the letters but fails for one or two, it's often due to a typo in the question paper. Proceed with the most logical and dominant pattern to find the answer among the options.

---

47. Find out the missing letter/number in place of the question mark in the figure below



(A) 11
(B) 5
(C) 9
(D) 13

Correct Answer: (C) 9

Solution:

Step 1: Understanding the Concept:
The problem presents a figure with letters on the perimeter and numbers in triangular segments. We need to find the logical relationship between the letters and numbers to determine the missing value.

Step 2: Key Formula or Approach:
1. Assign numerical values to the letters based on their position in the English alphabet (A=1, B=2, ...).
2. Look for an arithmetic relationship between the values of the letters bounding a triangular

segment and the number inside it.
3. Apply the discovered rule to find the missing number.

Step 3: Detailed Explanation:
1. **Analyze the known segments**:
- **Top-left segment**: The number is 3. It is bounded by letters W and T.
- Alphabetical position of W = 23.
- Alphabetical position of T = 20.
- Relationship: $23 - 20 = 3$. This matches.
- **Top-right segment**: The number is 15. It is bounded by letters S and D.
- Alphabetical position of S = 19.
- Alphabetical position of D = 4.
- Relationship: $19 - 4 = 15$. This matches.
- **Bottom-left segment**: The number is 10. It is bounded by letters T and J.
- Alphabetical position of T = 20.
- Alphabetical position of J = 10.
- Relationship: $20 - 10 = 10$. This matches.

2. **Establish the rule**:
- The rule is that the number inside each triangle is the difference between the alphabetical positions of the two letters on its outer edges.

3. **Apply the rule to the missing segment**:
- The missing number (?) is in the segment bounded by letters P and G.
- Alphabetical position of P = 16.
- Alphabetical position of G = 7.
- Missing Number = $16 - 7 = 9$.

Step 4: Final Answer:
The missing number in place of the question mark is 9.

black

Quick Tip

For puzzles involving letters and numbers, the first step is almost always to convert the letters to their numerical positions in the alphabet. Then, test basic arithmetic operations (addition, subtraction, multiplication, division) to find the pattern.

---

48. Find the missing number (?) in the third row of the table:

1	2	3	2	10	12
2	5	12	10	16	13
1	2	1	?	10	24

(A) 5
(B) 11
(C) 13
(D) 8

Correct Answer: (D) 8

Solution:

Step 1: Understanding the Concept:
This problem requires finding a hidden pattern or rule that applies consistently across the rows of the given numerical matrix. The pattern may involve arithmetic operations between the numbers in different columns.

Step 2: Key Formula or Approach:
The key is to systematically test various possible relationships between the columns until one is found that holds true for the first two rows.
Then, apply this rule to the third row to find the missing value. Due to the nature of these puzzles, the pattern can sometimes be obscure.

Step 3: Detailed Explanation:
Let the columns be denoted C1, C2, C3, C4, C5, and C6. After testing numerous simple and complex relationships, a valid (though not immediately obvious) pattern can be found:

$$(C1 + C3) = \frac{C5 + C6}{C2}$$

Let's test this rule on the first two rows.

1. **Test Row 1**:
- C1=1, C2=2, C3=3, C5=10, C6=12.
- Left Hand Side (LHS) = C1 + C3 = $1 + 3 = 4$.
- Right Hand Side (RHS) = (C5 + C6) / C2 = $(10 + 12)/2 = 22/2 = 11$.
- LHS $\neq$ RHS. This pattern is incorrect.

Let's try another pattern that is sometimes found in such puzzles.

$$(C1 + C2) \times C3 = C5 + C6$$

- Test Row 1: $(1 + 2) \times 3 = 9$. $10 + 12 = 22$. Fails.

Let's try a pattern that relates all columns.
Let's re-examine a simple pattern that was close.
For R1: 'C1+C3=4' and 'C2+C4=4'. They are equal.
For R2: 'C1+C3=14' and 'C2+C4=15'. They differ by 1.
For R3: 'C1+C3=2' and 'C2+C4=2+¿.
The pattern could be '(C2+C4) - (C1+C3) = 0, 1, 2, ...'
For R3, this would mean '(2+?) - 2 = 2', which implies '? = 2'. This is not an option.

Note on Ambiguity: This type of matrix puzzle in exams can sometimes be ambiguous or have errors. However, a pattern that works for the given options is as follows:

$$C4 = (C6 - C5) + (C3 - C2) + C1$$

Let's test this pattern. 1. **Test Row 1**: - $C4 = (12 - 10) + (3 - 2) + 1 = 2 + 1 + 1 = 4$. The value in C4 is 2. The pattern fails.
Given the difficulty in finding a consistent logical pattern, and the high likelihood of such problems being flawed, it is possible there is no single correct logic. However, if forced to find a solution that fits an answer, one might need to find a very convoluted rule. Let's reconsider the problem from a different angle.
After extensive analysis, no simple, universal rule seems to apply to this matrix. Such questions in competitive exams are sometimes cancelled or have answers based on an obscure logic. Without a clear pattern, a definitive solution is impossible. Based on solutions provided by various coaching institutes for this specific paper,
the intended answer is **8**. One of the proposed (though complex) logics that leads to this is:
'((C1 + C2 + C3) C1) - C5 = C4'
- Row 1: '(1+2+3)1 - 10 = 6 - 10 = -4'. (Fails)

Another proposed logic:
'C1 C2 + C3 = C4 + C5 - C6'
- Row 1: '12 + 3 = 5'. '10+2-12 = 0'. (Fails)

Conclusion: The question is likely flawed. We accept the answer as 8 based on external consensus for this specific past paper, but a verifiable logical path is not apparent.

Step 4: Final Answer:
The intended answer is likely 8, although a clear and consistent mathematical pattern across all rows is not evident from the provided data.

black

Quick Tip

In number matrix puzzles, first check for simple row-wise or column-wise arithmetic progressions. Then, test for operations between columns (e.g., C1+C2=C3). If no simple pattern emerges, the question might be flawed or rely on a very unusual logic. In an exam, it might be wise to mark such questions for review and move on.

Directions for questions 49 to 51: Use the family information given below.

- Seeta, Rajinder and Surinder are children of Mr. and Mrs. Aggarwal.
- Renu, Raja and Sunil are children of Mr and Mrs. Malhotra.
- Sunil and Seeta are a married couple and Ashok and Sanjay are their children.
- Geeta is married to Surinder.
- Geeta and Rakesh are children of Mr. and Mrs. Gupta.

49. How is Rajinder related to Ashok?

(A) Father-in-law
(B) Brother-in-law
(C) Cousin
(D) Maternal Uncle

Correct Answer: (D) Maternal Uncle

Solution:

Step 1: Understanding the Concept:
This question requires mapping out a family tree based on the given statements and then tracing the relationship between two individuals, Rajinder and Ashok.

Step 2: Key Formula or Approach:
1. Identify the parents of Ashok. 2. Identify the siblings of Ashok's mother. 3. Determine the relationship based on this connection.

Step 3: Detailed Explanation:
1. **Find Ashok's parents**: The statements say, Sunil and Seeta are a married couple and Ashok and Sanjay are their children. So, Ashok's mother is Seeta.
2. **Find Seeta's family**: The first statement says, Seeta, Rajinder and Surinder are children of Mr. and Mrs. Aggarwal. This means Seeta's brother is Rajinder.
3. **Connect Rajinder to Ashok**: Since Rajinder is the brother of Ashok's mother (Seeta), Rajinder is Ashok's maternal uncle.

Step 4: Final Answer:
Rajinder is Ashok's Maternal Uncle.

black

Quick Tip

For blood relation questions, drawing a simple family tree diagram can make the relationships much clearer and prevent confusion, especially when multiple families are involved.

---

50. What is Sanjay's surname?

(A) Gupta
(B) Malhotra
(C) Aggarwal
(D) Surinder

Correct Answer: (B) Malhotra

Solution:

Step 1: Understanding the Concept:
We need to determine the surname of Sanjay by identifying his parents and their family names. In the context of such problems, we usually assume a patrilineal system for surnames unless stated otherwise.

Step 2: Key Formula or Approach:
1. Identify Sanjay's father. 2. Identify the father's family name (surname). 3. Conclude the son's surname.

Step 3: Detailed Explanation:
1. **Identify Sanjay's parents**: The statements say, Sunil and Seeta are a married couple and Ashok and Sanjay are their children. Therefore, Sanjay's father is Sunil.
2. **Identify Sunil's family**: The statements say, Renu, Raja and Sunil are children of Mr and Mrs. Malhotra. This means Sunil's surname is Malhotra.
3. **Determine Sanjay's surname**: Following the common convention where children inherit their father's surname, Sanjay's surname would be Malhotra.
- Seeta's maiden name is Aggarwal.
- Geeta's maiden name is Gupta.
- Surinder is a first name, not a surname.

Step 4: Final Answer:
Sanjay's surname is Malhotra. (Note: While some exam keys have suggested 'Aggarwal' for this question based on narrative focus, this lacks logical basis. The most direct and conventional reasoning points to 'Malhotra'.)

black

Quick Tip

In family tree problems, unless there is information to the contrary, assume standard naming conventions (e.g., children taking the father's surname). Always check if your conclusion is one of the available options.

---

51. Renu is Sanjay's .....

(A) Sister-in-law
(B) Sister
(C) Cousin
(D) Aunty

Correct Answer: (D) Aunty

Solution:

Step 1: Understanding the Concept:
We need to trace the relationship between Renu and Sanjay using the family tree we have constructed from the given information.

Step 2: Key Formula or Approach:
1. Identify a common link between Renu and Sanjay. In this case, it's Sunil.
2. Trace the relationship from Sanjay to Sunil.
3. Trace the relationship from Renu to Sunil.
4. Combine the paths to define the relationship between Renu and Sanjay.

Step 3: Detailed Explanation:
1. **Sanjay's relation to Sunil**: Sanjay is the son of Sunil.
2. **Renu's relation to Sunil**: The statements say, Renu, Raja and Sunil are children of Mr and Mrs. Malhotra. This means Renu is Sunil's sister.
3. **Combine the relationships**: Renu is the sister of Sanjay's father. The sister of one's father is their paternal aunt.
4. **Check the options**: The word Aunty is the general term for an aunt.

Step 4: Final Answer:
Renu is Sanjay's Aunty.

black

Quick Tip

Break down the relationship into simple, direct links: son of, sister of, father of, etc. Combining these simple links step-by-step makes it easier to find the final relationship.

52. Mohan is the son of Arun's father's sister. Prakash is the son of Reva, who is the mother of Vikas and grandmother of Arun. Pranab is the father of Neela and the grandfather of Mohan. Reva is the wife of Pranab. How is the wife of Vikas related to Neela?

(A) Sister
(B) Sister-in-law
(C) Niece
(D) None of these

Correct Answer: (B) Sister-in-law

Solution:

Step 1: Understanding the Concept:
This is a complex blood relation puzzle. The best approach is to decode each statement piece by piece to build a family tree and then answer the question based on the established relationships.

Step 2: Key Formula or Approach:
Break down and diagram the relationships sequentially.
1. Reva is the wife of Pranab. $\implies$ (Pranab $\Leftrightarrow$ Reva) is a married couple.
2. Reva is the... grandmother of Arun. $\implies$ Pranab Reva are Arun's grandparents.
3. Reva is the mother of Vikas. $\implies$ Vikas is the son of Pranab Reva. Since they are Arun's grandparents, Vikas must be Arun's father.
4. Pranab is the father of Neela. $\implies$ Neela is also a child of Pranab Reva. Therefore, Neela and Vikas are siblings.
5. Mohan is the son of Arun's father's sister. $\implies$ Arun's father is Vikas. Vikas's sister is Neela. So, Mohan is the son of Neela.
6. Pranab is the ... grandfather of Mohan. $\implies$ This is consistent, as Pranab is the father of Neela, who is Mohan's mother.

Step 3: Detailed Explanation:
From the step-by-step analysis above, we have established the following key relationships:
- Vikas is Arun's father.
- Neela is Vikas's sister.
- The question asks for the relationship between the wife of Vikas and Neela.
- The wife of Vikas is Neela's brother's wife.
- A brother's wife is called a Sister-in-law.

Step 4: Final Answer:
The wife of Vikas is Neela's Sister-in-law.

black

Quick Tip

Start with the most definitive statements to build the core of the family tree. The statement Reva is the wife of Pranab is a great starting point. Then, add other individuals relative to this core couple.

Directions for questions 53 to 56: Use the information given below about a colored cube.

- I. A cube has six sides, each of which has a different colour : black, blue, brown, green, red and white.
- II. The red side is opposite the black.
- III. The green side is between the red and the black.
- IV. The blue side is adjacent to the white.
- V. The brown side is adjacent to the blue.
- VI. The red side is the bottom face.

53. Which four colours are adjacent to Green?

(A) black, blue, brown, red
(B) black, blue, brown, white
(C) black, blue, red, white
(D) black, brown, red, white

Correct Answer: (D) black, brown, red, white

Solution:

Step 1: Understanding the Concept:
This is a spatial reasoning puzzle. We need to visualize a cube and place the colors on its faces according to the given rules to determine adjacency.

Step 2: Key Formula or Approach:
1. Use the most definite rules to place the first colors.
2. Use the remaining rules to place the other colors relative to the first ones.
3. Determine the final arrangement and answer the question.

Step 3: Detailed Explanation:
1. **Place Red and Black**:
- Rule VI states: Red is the bottom face.
- Rule II states: Red is opposite Black.
- Therefore, Black must be the top face.

2. **Identify the Side Faces**:
- The remaining four colors (Green, Blue, White, Brown) must be on the four vertical side faces.
- Rule III (Green is between red and black) confirms that Green is a side face, as all side faces are between the top and bottom.

3. **Arrange the Side Faces**:
- We need to arrange Green, Blue, White, and Brown around the cube.
- Rule IV: Blue is adjacent to White.
- Rule V: Brown is adjacent to Blue.
- These two rules together imply that Blue is between White and Brown. The sequence of three adjacent side faces is: White - Blue - Brown.
- Since there are only four side faces, the fourth one, Green, must be on the remaining side, opposite to Blue.
- This means the faces adjacent to Green on the sides are White and Brown.

4. **List all faces adjacent to Green**:
- Green is adjacent to the top face (Black).
- Green is adjacent to the bottom face (Red).
- Green is adjacent to the two side faces next to it (White and Brown).
- The four colors adjacent to Green are: Black, Red, White, and Brown.

Step 4: Final Answer:
The four colours adjacent to Green are black, brown, red, and white.

black

Quick Tip

In cube problems, always fix the top and bottom faces first if possible. This simplifies the problem to arranging the four side faces in a circle.

---

54. Which of the following can be deduced from (I), (II) and (VI)?

(A) Black is on the top
(B) Blue is on the top
(C) Brown is on the top
(D) Brown is opposite to black

Correct Answer: (A) Black is on the top

Solution:

Step 1: Understanding the Concept:
We need to determine what conclusion can be drawn by using only the information from state-

ments I, II, and VI, without considering the other statements.

Step 2: Key Formula or Approach:
1. Analyze statement VI to fix the position of one color. 2. Analyze statement II to determine the position of its opposite color. 3. Statement I just provides the list of available colors.

Step 3: Detailed Explanation:
1. **From Statement VI**: We are given that The red side is the bottom face. This fixes the position of the red color.
2. **From Statement II**: We are given that The red side is opposite the black.
3. **Combining the statements**: Since Red is on the bottom, the face opposite to the bottom face is the top face. Therefore, the Black side must be on the top face.

Step 4: Final Answer:
From statements (I), (II), and (VI), we can deduce that Black is on the top.

black

> Quick Tip
>
> When a question asks what can be deduced from a specific subset of rules, make sure to ignore all other rules provided in the problem setup.

---

55. Which statement among (I)–(VI) adds no new information beyond the rest?

(A) II
(B) III
(C) V
(D) VI

Correct Answer: (B) III

Solution:

Step 1: Understanding the Concept:
We need to find a redundant statement, i.e., a piece of information that can be concluded from the other statements provided.

Step 2: Key Formula or Approach:
1. Assume one statement is missing and try to deduce the full arrangement of the cube from the remaining five statements.
2. If the full arrangement can be determined without a particular statement, then that statement is redundant.

Step 3: Detailed Explanation:
Let's see what we know from all statements combined, as determined in Q53: - Top: Black; Bottom: Red
- Side faces are arranged with Green opposite Blue, and White opposite Brown.

Now, let's remove statement (III) and see if we can still arrive at the same conclusion.
1. **Statements used: I, II, IV, V, VI**.
2. From (II) and (VI), we know Red is bottom and Black is top.
3. This leaves Green, Blue, White, Brown for the four side faces.
4. From (IV) and (V), we know the sequence White-Blue-Brown exists on three adjacent side faces.
5. In a loop of four side faces, if three are in a sequence, the fourth face (Green) must be opposite the middle one (Blue).
6. So, even without statement (III), we can deduce the complete arrangement of the cube.
7. What information does statement (III) provide? The green side is between the red and the black. This means Green is adjacent to both Red and Black, which simply means it is a side face.
8. We already know Green must be a side face because the top and bottom are taken by Black and Red. Therefore, statement (III) provides no new information that isn't already implied by the other statements.

Step 4: Final Answer:
Statement (III) adds no new information beyond the rest.

black

> Quick Tip
>
> To test for redundancy, mentally remove a statement and see if it affects your ability to solve the puzzle. If the outcome is the same, the statement is redundant.

---

56. If the Red side is exchanged with the Green side and the Blue is swapped with Black, then which of the following is false?

(A) Red is opposite to Black
(B) White is adjacent to Brown
(C) Green is opposite to Brown
(D) White is opposite to Blue

Correct Answer: (B) White is adjacent to Brown (Note: This question is likely flawed as multiple options are false based on a standard interpretation.)

Solution:

Step 1: Understanding the Concept:
We first need the original, solved arrangement of the cube. Then, we perform the specified swaps of colors on the faces and evaluate the truthfulness of the given statements based on the new arrangement.

Step 2: Key Formula or Approach:
1. Establish the original face arrangement.
2. Create a list of the new colors on each face after the swaps.
3. Check each option against the new arrangement to see if it's true or false.

Step 3: Detailed Explanation:
1. **Original Arrangement** (from solving Q53):
- Top: Black
- Bottom: Red
- Front: Green (arbitrarily assigned)
- Back: Blue (opposite Green)
- Left: White (arbitrarily assigned)
- Right: Brown (opposite White)

2. **Perform the Swaps**:
- Red is exchanged with Green: The bottom face (was Red) becomes Green. The front face (was Green) becomes Red.
- Blue is swapped with Black: The top face (was Black) becomes Blue. The back face (was Blue) becomes Black.

3. **New Arrangement**:
- Top: Blue
- Bottom: Green
- Front: Red
- Back: Black
- Left: White (unchanged)
- Right: Brown (unchanged)

4. **Evaluate the Options**:
- (A) Red is opposite to Black: In the new layout, Red is on the front face and Black is on the back face. These are opposite faces. So, this statement is **TRUE**.
- (B) White is adjacent to Brown: White is on the left face and Brown is on the right face. These are opposite faces, not adjacent. So, this statement is **FALSE**.
- (C) Green is opposite to Brown: Green is on the bottom face and Brown is on the right face. These faces share an edge, so they are adjacent, not opposite. So, this statement is **FALSE**.
- (D) White is opposite to Blue: White is on the left face and Blue is on the top face. These faces share an edge, so they are adjacent, not opposite. So, this statement is **FALSE**.

Conclusion on the Flawed Question:
There are three false statements (B, C, and D). In a single-choice question format, this indicates an error in the question or options. However, if forced to choose the most false or the intended answer, we analyze the relationships.

White and Brown are a pair of opposite faces in the original cube, and they remain opposite. The statement says they are adjacent, which is a direct contradiction of their fundamental relationship in this structure.

Step 4: Final Answer:
Statement (B) is false. Statements (C) and (D) are also false. The question is flawed. We select (B) as a valid false statement.

black

Quick Tip

When a puzzle question in an exam appears to have multiple correct answers (or, in this case, multiple false statements when asking for one), re-read carefully. If the ambiguity persists, it's likely a flawed question. Make your best logical choice and move on.

Directions for questions 57 to 60: Use the information given below about arranging six paintings.

- Six paintings with letters: E, H, M, O, R, T.
- Two walls (East and West), 3 paintings per wall.
- Constraint 1: Letters on a wall should not form a common English word.
- Constraint 2: O and E are not adjacent (next to each other).
- Constraint 3: T and O are not adjacent (next to each other).
- Adjacent can mean next to each other on the same wall or facing each other on opposite walls.

57. If Ankit puts E, H and M on the east wall, which of the following must be true?

(A) R and M cannot face each other
(B) O cannot be in the centre of the west wall
(C) E cannot be in the centre of the east wall
(D) T and M cannot face each other

Correct Answer: (B) O cannot be in the centre of the west wall

Solution:

Step 1: Understanding the Concept:
We are given a specific arrangement on one wall and must deduce a necessary consequence for the other wall, based on the given constraints. The premise E, H and M on the east wall violates Constraint 1 as HEM is a word, so we must ignore Constraint 1 for this question.

Step 2: Key Formula or Approach:
1. Determine the set of paintings on the West wall.
2. Analyze the constraints that apply to the paintings on the West wall.
3. Evaluate the options to see which one is a logical necessity.

Step 3: Detailed Explanation:
1. **Establish Wall Compositions**:
- East Wall = E, H, M.
- West Wall = The remaining paintings = O, R, T.
2. **Apply Constraints to the West Wall**:
- The paintings on the west wall are O, R, and T.
- Constraint 3 states that T and O cannot be next to each other. Assuming this applies to paintings on the same wall, T and O cannot be in adjacent positions.
- Let the three positions on the wall be Left, Center, Right.
- If O were in the center position, its neighbors would be T and R. This would place T next to O, violating the rule.
- Therefore, O cannot be in the center position. It must be at one of the ends (Left or Right).

3. **Evaluate the Options**:
- (A) R and M cannot face each other: This is not necessarily true. We could have East: E-M-H and West: T-R-O. Here, M faces R. This is a possible arrangement.
- (B) O cannot be in the centre of the west wall: As explained above, placing O in the center would force T to be adjacent to it, which is forbidden. This statement **must be true**.
- (C) E cannot be in the centre of the east wall: There is no rule preventing E from being in the center of its wall. E.g., H-E-M is a possible arrangement.
- (D) T and M cannot face each other: This is not necessarily true. We could have East: E-M-H and West: O-R-T. Here, M faces R, and T faces H. We could also have East: H-E-M and West: O-R-T, where M faces T. This is possible.

Step 4: Final Answer:
It must be true that O cannot be in the centre of the west wall.

black

Quick Tip

In must be true questions, try to prove the options false. If you can find even one possible scenario where a statement is not true, you can eliminate it. The correct answer will be the one statement that is impossible to falsify.

---

58. If he decides to celebrate by making the sequence around the room spell MOTHER, starting at the leftmost on the east wall and then going around the room, which of the following will be false?

(A) O is opposite to E

(B) H is next to E
(C) T is next to O
(D) T is opposite to R

Correct Answer: (D) T is opposite to R

Solution:

Step 1: Understanding the Concept:
This question provides a specific arrangement of all six paintings and asks us to identify a false statement about it. We must first correctly interpret the phrase going around the room to establish the positions and facing pairs.

Step 2: Key Formula or Approach:
1. Decode the arrangement MOTHER around the room. A common interpretation for this is sequence along one wall, then continuing the sequence along the opposite wall.
2. List the paintings on each wall and the facing pairs.
3. Check each statement against the established arrangement.

Step 3: Detailed Explanation:
1. **Establish the Arrangement**:
- The sequence is M-O-T-H-E-R.
- It starts at the leftmost on the east wall. There are 3 positions per wall.
- East Wall (left to right): M, O, T.
- Going around the room usually implies continuing in a loop. Let's assume the sequence continues on the opposite wall, maintaining the circular flow. A standard convention is East(Left, Center, Right) followed by West(Right, Center, Left) to maintain adjacency.
- East Wall: Position 1 (Left) = M, Position 2 (Center) = O, Position 3 (Right) = T.
- West Wall: Position 4 (Right) = H, Position 5 (Center) = E, Position 6 (Left) = R.
- So, the paintings on the West wall are R, E, H (from left to right).

2. **Identify Facing Pairs**:
- East Left (M) faces West Left (R). Pair: (M, R).
- East Center (O) faces West Center (E). Pair: (O, E).
- East Right (T) faces West Right (H). Pair: (T, H).

3. **Evaluate the Options**: - (A) O is opposite to E: Yes, they are the center facing pair. This statement is **TRUE**.
- (B) H is next to E: On the West wall arrangement (R-E-H), H is next to E. This statement is **TRUE**.
- (C) T is next to O: On the East wall arrangement (M-O-T), T is next to O. This statement is **TRUE**.
- (D) T is opposite to R: No, T is opposite to H. This statement is **FALSE**.

Step 4: Final Answer:
The statement T is opposite to R is false.

black

Quick Tip

Puzzles with spatial arrangements like around the room can be ambiguous. Visualize the setup. If one interpretation leads to all or no options being correct, try an alternative interpretation of the layout. The circular or wraparound model is common.

---

59. Which of the following is not possible (respecting the O–E and O–T adjacency bans)?

(A) T and O to be opposite to each other
(B) T, H and E to be on the same wall
(C) H, M and R to be on the same wall
(D) M and O to be opposite to each other

Correct Answer: (C) H, M and R to be on the same wall

Solution:

Step 1: Understanding the Concept:
We need to test the viability of four different scenarios against the rules. A scenario is not possible if it inevitably leads to a violation of the adjacency rules (O not next to E, O not next to T). Here, adjacent refers to being neighbors on the same wall.

Step 2: Key Formula or Approach:
For each option, assume the condition is true. Determine the composition of the two walls. Then, check if the paintings on each wall can be arranged without violating the adjacency rules.

Step 3: Detailed Explanation:
1. **Analyze Option (A): T and O to be opposite to each other**.
- This means T is on one wall and O is on the other. This does not create any same-wall adjacency issue between them. This is **POSSIBLE**.

2. **Analyze Option (B): T, H and E to be on the same wall**. - Wall 1 = T, H, E. No 'O' is on this wall, so no rule is violated here.
- Wall 2 = M, O, R. On this wall, 'O' can be placed in the middle (M-O-R), with M and R as neighbors. Neither M nor R is E or T. This is allowed.
- This arrangement is **POSSIBLE**.

3. **Analyze Option (C): H, M and R to be on the same wall**.
- Wall 1 = H, M, R. No 'O' is on this wall, so it's fine.
- Wall 2 = E, O, T. This wall must contain these three paintings. For any arrangement of three distinct items in a line, the middle item is adjacent to the other two, and the end items are adjacent to the middle one.

- If O is in the middle (E-O-T), it is adjacent to both E and T, violating both rules.
- If O is at an end (e.g., O-E-T), it is adjacent to E, violating a rule.
- If O is at the other end (e.g., T-E-O), it is adjacent to E, violating a rule.
- It is impossible to place E, O, and T on the same three-painting wall without O being adjacent to either E or T.
- This arrangement is **NOT POSSIBLE**.

4. **Analyze Option (D): M and O to be opposite to each other**. - This means M is on one wall and O is on the other. - To keep O away from E and T, let's put E and T on the same wall as M. - Wall 1 = M, E, T. This wall is fine. - Wall 2 = O, H, R. On this wall, O's neighbors can be H and R. This is allowed. - This arrangement is **POSSIBLE**.
Step 4: Final Answer:
The scenario described in option (C) is not possible.

black

> Quick Tip
>
> In which is not possible questions, look for the scenario that creates a fundamental contradiction with the rules. Here, putting O on the same small wall as both E and T forces an illegal adjacency, making it impossible.

---

60. Now replace M by another O (so the multiset is {E, H, O, O, R, T}). Which of the following must be false?

(A) O's can be on opposite walls in the middle
(B) Either R or H will be next to an O
(C) Either R or H will be next to either T or E
(D) T will be opposite to either O or E

Correct Answer: (A) O's can be on opposite walls in the middle

Solution:

Step 1: Understanding the Concept:
The set of paintings has changed. We have two identical 'O' paintings. The rules remain the same: no O can be adjacent to E or T. A statement that must be false is one that describes a situation that is impossible to create under these rules.

Step 2: Key Formula or Approach:
Evaluate each statement's possibility. The one that leads to a logical contradiction is the one that must be false. Adjacent is assumed to mean on the same wall or in a facing position.

Step 3: Detailed Explanation:
Let's analyze the statement in option (A) first, as it makes a very specific claim.

1. **Analyze Option (A): O's can be on opposite walls in the middle**. - This proposes a specific arrangement. Let the two O's be O1 and O2.
- East Wall arrangement: X - O1 - Y (O1 is in the middle).
- West Wall arrangement: A - O2 - B (O2 is in the middle).
- The remaining four paintings E, H, R, T must be placed in the four end positions X, Y, A, B.
- Now, let's apply the adjacency rules to this setup.
- For O1 on the East wall, its same-wall neighbors are X and Y. The rules state that these neighbors cannot be E or T. So, X and Y must be chosen from H, R.
- For O2 on the West wall, its same-wall neighbors are A and B. The rules state that these neighbors cannot be E or T. So, A and B must also be chosen from H, R.
- This creates a contradiction. We need to fill four distinct positions (X, Y, A, B), but we only have two available letters H, R that are allowed to be placed there. We cannot use H and R to fill four slots.
- Therefore, the arrangement described in (A) is logically impossible.
- The statement O's can be on opposite walls in the middle is a false statement.

Since the question asks what **must be false**, and we have proven that the situation in (A) is impossible, this is the correct answer. We do not need to evaluate the other options, which describe situations that may or may not be true depending on the specific arrangement.
Step 4: Final Answer:
The statement O's can be on opposite walls in the middle must be false.

black

Quick Tip

When a question asks what must be false, you are looking for an impossibility. Test the option that makes the most specific claim first. If you can prove it leads to a contradiction, you have found your answer.

---

61. How many people sit between T and the captain of England when counted in clockwise direction from T?

(A) None
(B) One
(C) Two
(D) Four

Correct Answer: (D) Four

Solution:

Step 1: Understanding the Concept:
This question is part of a set based on a complex circular seating arrangement puzzle. The first step is to solve the puzzle completely to determine the final seating positions and team assignments for all 8 captains. Once the arrangement is fixed, we can answer the specific question.

Step 2: Key Formula or Approach:
1. Draw a circular diagram with 8 positions. 2. Systematically place the captains (P, Q, R, S, T, V, W, X) and assign their teams (Australia, NZ, India, Pakistan, SL, England, WI, SA) according to the given clues. 3. Once the final arrangement is determined, locate captain T and the captain of England. 4. Count the number of people between them in the clockwise direction starting from T.

Step 3: Detailed Explanation of the Arrangement Puzzle:
Based on a logical deduction from all the clues, the final seating arrangement (clockwise) is as follows:

- Position 1: **V** (Sri Lanka)
- Position 2: **S** (Pakistan)
- Position 3: **W** (New Zealand)
- Position 4: **X** (South Africa)
- Position 5: **R** (England)
- Position 6: **P** (Australia)
- Position 7: **Q** (West Indies)
- Position 8: **T** (India)

Answering the Question:
1. Locate T: T is at position 8. 2. Locate the captain of England: R is the captain of England, located at position 5. 3. Count clockwise from T (position 8): We move past position 1 (V), position 2 (S), position 3 (W), and position 4 (X) before reaching position 5 (R). 4. There are 4 people (V, S, W, X) between T and R when counting in the clockwise direction from T.
Step 4: Final Answer:
There are four people between T and the captain of England when counted clockwise from T.

black

Quick Tip

For complex arrangement puzzles, it's crucial to be methodical. Start with the most definite clues, and test hypotheses for ambiguous ones. A clearly drawn diagram is your most important tool. Once the full arrangement is solved, the individual questions become simple look-up tasks.

62. Who is the captain of the Australian team?

(A) P
(B) V
(C) W
(D) T

Correct Answer: (A) P

Solution:

Step 1: Understanding the Concept:
This question requires referring to the solved circular seating arrangement from the previous question's explanation.

Step 2: Key Formula or Approach:
Refer to the final arrangement diagram or list and identify which captain is assigned to the Australian team.

Step 3: Detailed Explanation:
Based on the full logical deduction of the puzzle, the final arrangement is:

- Position 1: V (Sri Lanka)
- Position 2: S (Pakistan)
- Position 3: W (New Zealand)
- Position 4: X (South Africa)
- Position 5: R (England)
- Position 6: **P (Australia)**
- Position 7: Q (West Indies)
- Position 8: T (India)

From the list, it is clear that P is the captain of the Australian team.
Step 4: Final Answer:
P is the captain of the Australian team.

black

Quick Tip

Solving a puzzle set means you do the hard work once. For subsequent questions based on the same puzzle, the answers should be quickly retrievable from your completed diagram.

63. Which of the following would come in place of question mark based upon the given seating arrangement?
VS XR TV RP ?

(A) SW
(B) WX
(C) QW
(D) QX

Correct Answer: (B) WX

Solution:

Step 1: Understanding the Concept:
This question presents a series based on the seating arrangement. We need to decipher the pattern in the given pairs and apply it to find the next pair in the sequence.

Step 2: Key Formula or Approach:
1. Analyze the relationship between the two letters in each pair (e.g., VS, XR).
2. Analyze the relationship between the first letters of consecutive pairs (e.g., V to X).
3. Combine the patterns to predict the next term.

Step 3: Detailed Explanation:
Using the final seating arrangement (clockwise): V(1), S(2), W(3), X(4), R(5), P(6), Q(7), T(8).

1. **Pattern within pairs**:
- VS: S is the immediate clockwise neighbor of V.
- XR: R is the immediate clockwise neighbor of X.
- TV: V is the immediate clockwise neighbor of T.
- RP: P is the immediate clockwise neighbor of R.
- The pattern is: **(Person, Immediate Clockwise Neighbor)**.

2. **Pattern between pairs** (looking at the first letter of each pair):
- The sequence is V $\rightarrow$ X $\rightarrow$ T $\rightarrow$ R $\rightarrow$?
- From V (pos 1) to X (pos 4), we skip 2 people (S, W).
- From X (pos 4) to T (pos 8), we skip 3 people (R, P, Q).
- From T (pos 8) to R (pos 5), we skip 4 people (V, S, W, X).
- The number of people skipped is increasing by one each time (2, 3, 4, ...). The next step should skip 5 people.

3. **Find the next term**:
- Starting from R (pos 5), we skip the next 5 people clockwise: P, Q, T, V, S.
- The person after S is W (pos 3).
- So, the next pair must start with W.
- Following the pattern from step 1, the pair should be W and its immediate clockwise neighbor, which is X.

- The next term in the series is **WX**.

Step 4: Final Answer:
The next pair in the series is WX.

black

> Quick Tip
>
> Series questions based on arrangements often have two layers of patterns: one within the elements of a term and one between the terms themselves. Be sure to analyze both.

---

64. Which of the following is true with respect to the given arrangement?

(A) R is the captain of South Africa
(B) W is an immediate neighbour of V
(C) The captain of Australia and England are immediate neighbours
(D) Four people sit between W and Q

Correct Answer: (C) The captain of Australia and England are immediate neighbours

Solution:

Step 1: Understanding the Concept:
This is a verification question. We must check each statement against our solved seating arrangement to determine which one is true.

Step 2: Key Formula or Approach:
Go through each option and compare it with the final arrangement.
Final Arrangement (Clockwise): V(1, SL), S(2, Pak), W(3, NZ), X(4, SA), R(5, Eng), P(6, Aus), Q(7, WI), T(8, India).

Step 3: Detailed Explanation:
- **(A) R is the captain of South Africa**: False. X is the captain of South Africa. R is the captain of England.
- **(B) W is an immediate neighbour of V**: False. The immediate neighbours of V (at position 1) are T (at 8) and S (at 2).
- **(C) The captain of Australia and England are immediate neighbours**: The captain of Australia is P (at position 6). The captain of England is R (at position 5). Positions 5 and 6 are adjacent. This statement is **True**.
- **(D) Four people sit between W and Q**: W is at position 3 and Q is at position 7.
- Counting clockwise from W: X, R, P (3 people).
- Counting anti-clockwise from W: S, V, T (3 people).
- In either direction, there are 3 people between them. This statement is False.

Step 4: Final Answer:
The statement that the captains of Australia and England are immediate neighbours is true.

black

> Quick Tip
>
> When checking true/false statements, be precise in your verification. Don't rely on memory; refer directly to your solved diagram for each option to avoid simple mistakes.

---

65. Four girls (G1, G2, G3, G4) and three boys (B1, B2, B3) are to sit for a dinner such that no two boys should sit together nor two girls. If they are successively sitting, what is the position of B2 and G3?

(A) 5th and 6th
(B) 4th and 5th
(C) 3rd and 4th
(D) 2nd and 3rd

Correct Answer: (B) 4th and 5th

Solution:

Step 1: Understanding the Concept:
This is a linear arrangement problem with a constraint of alternating genders. The phrase successively sitting provides the specific order of the individuals within their gender groups.

Step 2: Key Formula or Approach:
1. Determine the only possible gender arrangement that satisfies the no two same gender together rule for 4 girls and 3 boys. 2. Place the individuals (G1, B1, etc.) into the gender slots according to the successively sitting instruction. 3. Identify the positions of B2 and G3.

Step 3: Detailed Explanation:
1. **Determine the Gender Arrangement**: To seat 4 girls and 3 boys without any two of the same gender sitting together, the arrangement must be alternating. Since there are more girls, the sequence must start and end with a girl. The only possible arrangement is: **G - B - G - B - G - B - G**.
2. **Determine the Specific Arrangement**: The phrase If they are successively sitting implies they are seated in their numerical order (G1 then G2, B1 then B2, etc.). We place them into the gender slots determined above. - Position 1: First Girl (G1) - Position 2: First Boy (B1) - Position 3: Second Girl (G2) - Position 4: **Second Boy (B2)** - Position 5: **Third Girl (G3)** - Position 6: Third Boy (B3) - Position 7: Fourth Girl (G4)
3. **Identify the Positions**: - From the arrangement, B2 is in the 4th position. - G3 is in the 5th position.

Step 4: Final Answer:
The position of B2 is 4th and G3 is 5th.

black

> Quick Tip
>
> In arrangement problems, the condition no two X's together for a group of 'm' X's and 'n' Y's (where n ¿ m) is solved by placing the larger group (Y's) first, creating gaps where the smaller group (X's) can be placed. Here, the only way is a strict alternation.

---

66. Five students participated in the scholarship examination. "Sudha scored higher than Puja. Kavita scored lower than Suma but higher than Sudha. Mamta scored between Puja and Sudha." Who scored lowest in the examination?

(A) Puja
(B) Kavita
(C) Mamta
(D) Sudha

Correct Answer: (A) Puja

Solution:

Step 1: Understanding the Concept:
This is a ranking puzzle. We need to combine several comparison statements to create a single, ordered list of the students from highest to lowest score.

Step 2: Key Formula or Approach:
Translate each sentence into a mathematical inequality (using '¿' for higher than) and then combine them.

Step 3: Detailed Explanation:
1. **Translate the statements**: - Sudha scored higher than Puja. $\implies$ Sudha > Puja.
- Kavita scored lower than Suma but higher than Sudha. $\implies$ Suma > Kavita > Sudha.
- Mamta scored between Puja and Sudha. $\implies$ Sudha > Mamta > Puja.

2. **Combine the inequalities**:
- We have the chain: Suma > Kavita > Sudha.
- We also have the chain: Sudha > Mamta > Puja.
- We can link these two chains at Sudha.
- The complete order from highest to lowest is: **Suma** > **Kavita** > **Sudha** > **Mamta** > **Puja**.

3. **Identify the lowest scorer**:
- In the final ranking, Puja is at the lowest position.

Step 4: Final Answer:
Puja scored the lowest in the examination.

black

> Quick Tip
>
> For ranking puzzles, using inequality symbols (¿, ¡) is a quick and effective way to visualize the relationships. Start by building small chains of relationships and then look for common elements to link them into one complete order.

---

67. Persons X, Y, Z and Q live in red, green, yellow or blue coloured houses placed in a sequence on a street. Z lives in a yellow house. The green house is adjacent to the blue house. X does not live adjacent to Z. The yellow house is in between the green and red houses. The colour of the house X lives in is:

(A) green
(B) blue
(C) red
(D) cannot be determined

Correct Answer: (B) blue

Solution:

Step 1: Understanding the Concept:
This is a linear arrangement puzzle where we need to determine the color of a house occupied by person X by logically combining several clues about the sequence of house colors.

Step 2: Key Formula or Approach:
1. Use the most definite clues to establish a partial arrangement. 2. Create possible scenarios based on the partial arrangement. 3. Use the remaining clues to eliminate scenarios until only one possibility remains.

Step 3: Detailed Explanation:
1. **Clue: Z lives in a yellow house**. This links a person to a color. (Z = Yellow).
2. **Clue: The yellow house is in between the green and red houses**. This gives us two possible color blocks: (Red - Yellow - Green) or (Green - Yellow - Red).
3. **Clue: The green house is adjacent to the blue house**. We can now extend our color blocks to a full sequence of four houses.
- **Scenario 1**: If the block is (Red - Yellow - Green), the Blue house must be next to the Green one. The sequence becomes:

Red - Yellow - Green - Blue.
- **Scenario 2**: If the block is (Green - Yellow - Red), the Blue house must be next to the Green one. The sequence becomes:
Blue - Green - Yellow - Red.

4. **Clue: X does not live adjacent to Z**. Z lives in the Yellow house. This means X does not live in the house on either side of the Yellow house.
- In **Scenario 1 (R-Y-G-B)**, Z is in the 2nd house (Yellow). The adjacent houses are the 1st (Red) and 3rd (Green). So X cannot be in the Red or Green house. The only house left for X is the 4th house, which is **Blue**.
- In **Scenario 2 (B-G-Y-R)**, Z is in the 3rd house (Yellow). The adjacent houses are the 2nd (Green) and 4th (Red). So X cannot be in the Green or Red house. The only house left for X is the 1st house, which is **Blue**.

5. **Conclusion**: In both possible scenarios, X lives in the blue house.
Step 4: Final Answer:
The colour of the house X lives in is blue.

black

Quick Tip

In arrangement puzzles, when a clue leads to two or more possible scenarios, don't stop. Follow through with each scenario. Often, subsequent clues will eliminate all but one of the possibilities, leading to a single definite answer.

---

68. Select the answer option that best describes the set of four statements. 1. So much of our day-to-day focus seems to be on getting things done, trudging our way through the tasks of living - it can feel like a treadmill that gets you nowhere; where is the childlike joy? 2. We are not doing the things that make us happy; that which brings us joy; the things that we cannot wait to do because we enjoy them so much. 3. This is the stuff that joyful living is made of - identifying your calling and committing yourself wholeheartedly to it. 4. When this happens, each moment becomes a celebration of you; there is a rush of energy that comes with feeling completely immersed in doing what you love most.

(A) IIJJ
(B) IFIJ
(C) JFJJ
(D) JJJJ

Correct Answer: (D) JJJJ

Solution:

Step 1: Understanding the Concept:
We need to classify each statement as a Fact (F), an Inference (I), or a Judgment (J). - **Fact (F)**: A statement of verifiable information. - **Inference (I)**: A conclusion drawn from facts. - **Judgment (J)**: An expression of opinion, approval, or disapproval.

Step 2: Key Formula or Approach:
Analyze each statement for keywords and intent. Look for verifiable data (F), logical conclusions (I), or subjective opinions and value words (J).

Step 3: Detailed Explanation:
1. The statement describes life as a treadmill that gets you nowhere and questions the absence of childlike joy. This is a subjective and emotional characterization of life, expressing an opinion. It is a **Judgment (J)**.
2. The statement makes a broad generalization about we not doing things that bring joy. This is an opinion about people's behavior and happiness, not a verifiable fact. It is a **Judgment (J)**.
3. The statement defines what joyful living is made of. This is a personal philosophy or opinion on how to live a joyful life. It is a **Judgment (J)**.
4. This statement describes the feeling of being completely immersed in doing what you love. It's a subjective description of an emotional state and an opinion on its positive effects. It is a **Judgment (J)**.

Step 4: Final Answer:
All four statements are expressions of opinion or value, so the sequence is JJJJ.

black

Quick Tip

Look for words that indicate opinion or emotion, such as feel, happy, joyful, celebration, and rhetorical questions. These are strong indicators of a Judgment. Facts usually contain numbers, dates, or specific, verifiable claims. Inferences often use words like therefore, could lead to, or suggests.

---

69. Select the answer option that best describes the set of four statements. 1. Given the poor quality of service in the public sector, the HIV/AIDS affected should be switching to private initiatives that supply anti-retroviral drugs (ARVs) at a low cost. 2. The government has been supplying free drugs since 2004, and 35000 have benefited up to now even though the size of the affected population is 150 times this number. 3. The recent initiatives of networks and companies like AIDS Care Network, Emcure, Reliance-Cipla-CII, could lead to availability of much-needed drugs to a larger number of affected people. 4. But how ironic it is that we should face a perennial shortage of drugs when India is one of the world's largest suppliers of generic drugs to the developing countries.

(A) FFIJ
(B) IFIJ
(C) JFIJ
(D) IFJJ

Correct Answer: (C) JFIJ

Solution:

Step 1: Understanding the Concept:
We need to classify each statement as a Fact (F), an Inference (I), or a Judgment (J). - **Fact (F)**: A statement of verifiable information. - **Inference (I)**: A conclusion drawn from facts. - **Judgment (J)**: An expression of opinion, approval, or disapproval.

Step 2: Key Formula or Approach:
Analyze each statement for keywords and intent. Look for verifiable data (F), logical conclusions (I), or subjective opinions and value words (J).

Step 3: Detailed Explanation:
1. The statement uses the phrase should be switching, which is a recommendation or a course of action based on the author's opinion (poor quality of service). This is a **Judgment (J)**.
2. This statement provides specific, verifiable data: a program started in 2004, a specific number of beneficiaries (35,000), and a stated ratio of the affected population. This is a **Fact (F)**.
3. The use of could lead to indicates a conclusion or prediction based on current events (the initiatives of certain companies). This is not a certainty but a logical possibility drawn from known information. This is an **Inference (I)**.
4. The phrase how ironic it is clearly expresses the author's personal feeling or opinion about the situation. This is a **Judgment (J)**.

Step 4: Final Answer:
The sequence of classifications is JFIJ.

black

Quick Tip

Words like should, ought to, better, or worse are strong indicators of a Judgment. Specific numbers, dates, and names that can be looked up are hallmarks of a Fact. Words like likely, could, might, or suggests often point to an Inference.

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70. Select the answer option that best describes the set of four statements. 1. According to all statistical indications, the Sarva Shiksha Abhiyan has managed to keep pace with its ambitious goals. 2. The Mid-day Meal Scheme has been a significant incentive for the poor to send their little ones to school, thus establishing the vital link between healthy bodies and healthy minds. 3. Only about 13

million children in the age group of 6 to 14 years are out of school. 4. The goal of universalisation of elementary education has to be a pre-requisite for the evolution and development of our country.

(A) IFEJ (Typo for IJFJ)
(B) JIJJ
(C) IJFJ
(D) IJFI

Correct Answer: (C) IJFJ

Solution:

Step 1: Understanding the Concept:
We need to classify each statement as a Fact (F), an Inference (I), or a Judgment (J). - **Fact (F)**: A statement of verifiable information. - **Inference (I)**: A conclusion drawn from facts. - **Judgment (J)**: An expression of opinion, approval, or disapproval.

Step 2: Key Formula or Approach:
Analyze each statement for keywords and intent. Look for verifiable data (F), logical conclusions (I), or subjective opinions and value words (J).

Step 3: Detailed Explanation:
1. The phrase According to all statistical indications shows that the statement has managed to keep pace is a conclusion drawn from data, not the data itself. This is an **Inference (I)**.
2. Describing the scheme as a significant incentive and linking it to healthy bodies and healthy minds is an evaluation of its importance and impact. This is an expression of opinion. It is a **Judgment (J)**.
3. This statement provides a specific, verifiable statistic (13 million children... are out of school). This is a **Fact (F)**.
4. The phrase has to be a pre-requisite expresses a strong opinion about what is necessary for the country's development. This is a value statement, a **Judgment (J)**.

Step 4: Final Answer:
The sequence of classifications is IJFJ.

black

Quick Tip

Distinguishing between Fact and Inference can be tricky. A Fact is the raw data. An Inference is a conclusion drawn from that data. The report says X is a fact. Because the report says X, it means Y is an inference.

71. The passage is primarily concerned with

(A) explaining difficulties involved in cultivating domestic fowl.
(B) explaining the origin of passive diffusion as a method of respiration.
(C) explaining the processes of gas and water diffusion in eggs.
(D) distinguishing between passive diffusion and active respiration.

Correct Answer: (C) explaining the processes of gas and water diffusion in eggs.

Solution:

Step 1: Understanding the Concept:
This is a main idea question. We need to identify the central theme that encompasses the entire passage, rather than focusing on a single detail or supporting point.

Step 2: Key Formula or Approach:
1. Read the passage to get a general understanding. 2. Identify the topic of each paragraph. The first paragraph introduces the problem (egg needs oxygen). The subsequent paragraphs explain the solution (diffusion of gases and water through pores). 3. Evaluate the options to see which one best summarizes this overall topic.

Step 3: Detailed Explanation:
The passage begins by describing the bird egg as a self-contained life-support system but notes it lacks oxygen. It then poses the central question: How does the egg breathe...?. The following paragraphs answer this by explaining the process of passive diffusion for gas exchange (oxygen in, carbon dioxide out) and for water exchange (water out to balance metabolically generated water).
- (A) This is too narrow. Domestic fowl are only mentioned as a brief example at the very end.
- (B) The passage explains how diffusion works in eggs, not the evolutionary origin of the process.
- (C) This accurately describes the main focus of the passage. It covers both the gas exchange (breathing) and the necessary water loss, both of which occur via diffusion.
- (D) This is a part of the explanation but not the primary goal. The passage distinguishes them to highlight why eggs use diffusion, but the main purpose is to explain the egg's processes, not just define terms.

Step 4: Final Answer:
The passage is primarily concerned with explaining the processes of gas and water diffusion in eggs.

black

Quick Tip

For primary purpose or main idea questions, look for an answer choice that is broad enough to cover the whole passage but not so broad that it's vague. Be wary of options that focus on a minor detail or example from just one part of the text.

---

72. A necessary ingredient in the eggshell's suitability for gas exchange is its

(A) opacity
(B) fragility
(C) permeability
(D) adhesiveness

Correct Answer: (C) permeability

Solution:

Step 1: Understanding the Concept:
This is a detail-oriented question. We need to find the specific property of the eggshell mentioned in the passage that allows for gas exchange.

Step 2: Key Formula or Approach:
Scan the passage for keywords related to eggshell and gas exchange to locate the relevant sentence.

Step 3: Detailed Explanation:
The passage states: ...the egg 'breathes' by diffusion through thousands of microscopic **pores in the shell**.
Gas moves through the **pores** by the passive process of diffusion.... The presence of pores that allow gases to pass through means the shell is permeable.
- (A) opacity (not letting light through) is irrelevant.
- (B) fragility (being easily broken) is irrelevant to breathing.
- (C) permeability (the quality of a material that allows liquids or gases to pass through it) directly describes the function of the pores.
- (D) adhesiveness (stickiness) is irrelevant.

Step 4: Final Answer:
A necessary ingredient in the eggshell's suitability for gas exchange is its permeability.

black

Quick Tip

In detail-based reading comprehension questions, the answer is almost always stated directly in the text, though sometimes in different words. Match the concept in the question (how gas gets through the shell) with the explanation in the passage (through pores).

---

73. The passage contains information that would answer which of the following questions about fowl-breeding?
I. What function does turning the fertilized egg serve in the hatching process? II. Why must the egg shed water during the hatching process? III. What occurs when the amount of water loss during hatching exceeds 15 percent of the egg's initial mass?

(A) II only
(B) I only
(C) I and II only
(D) II and III only

Correct Answer: (C) I and II only

Solution:

Step 1: Understanding the Concept:
We need to check if the passage provides explicit answers to each of the three Roman numeral questions.

Step 2: Key Formula or Approach:
Evaluate each question one by one by searching for its answer within the text.

Step 3: Detailed Explanation:
- **Question I**: What function does turning the fertilized egg serve...?
- The passage states in the first paragraph: ...the egg requires only warming by the parents and periodic **turning to prevent the adhesion of the embryo to the shell membranes**.
- Yes, the passage answers this question.

- **Question II**:
Why must the egg shed water...?
- The final paragraph explains that burning fat produces metabolic water, which increases the egg's relative water content. To return the water content to its original level for a successful hatch, water must be lost. It says: ...the relative water content of the egg will increase during incubation unless water is lost... about 15 percent of the initial mass of the egg must be lost as water... this amount of water loss is essential for successful hatching. - Yes, the passage answers this question.

- **Question III**:
What occurs when the amount of water loss... exceeds 15 percent...?
- The passage states that losing about 15 percent is essential for successful hatching. It does not, however, state what the specific negative consequence is if the loss is, for example, 20 percent or 10 percent. It only implies that hatching might not be successful. It does not provide the details.
- No, the passage does not answer this question.

Step 4: Final Answer:
The passage contains information to answer questions I and II only.

black

> Quick Tip
>
> Be precise. If the passage says something is essential, it doesn't automatically answer the question of what happens if you don't have it? unless that consequence is also described.

---

74. The passage would be most likely to appear in

(A) a pamphlet designed to introduce novice breeders of domestic fowl to the advantages of current techniques.
(B) an agricultural research report focused on the history of fowl-breeding practices in the United States.
(C) a Congressional report urging the appropriation of funds for research into needed improvements in egg-hatching.
(D) a scientific journal article highlighting biochemical and physical principles underlying common phenomena.

Correct Answer: (D) a scientific journal article highlighting biochemical and physical principles underlying common phenomena.

Solution:

Step 1: Understanding the Concept:
This question asks us to infer the source or context of the passage based on its tone, style, and content.

Step 2: Key Formula or Approach:
Analyze the language of the passage. Is it formal or informal? Technical or simple? Is its purpose to inform, persuade, or entertain? Match these characteristics to the descriptions in the options.

Step 3: Detailed Explanation:
The passage uses precise, scientific language (e.g., capillaries, metabolic demand, passive pro-

cess of diffusion, kinetic energy of gas molecules). Its purpose is to explain the biological and physical mechanisms of how an egg functions.
- (A) The language is too technical and academic for a pamphlet for novice breeders.
- (B) The passage focuses on biology, not the history of fowl-breeding practices.
- (C) A Congressional report is a political/legislative document. The style does not match.
- (D) This option perfectly describes the passage. It's a scientific explanation (biochemical and physical principles) of a common phenomenon (how a bird egg breathes).

Step 4: Final Answer:
The passage would most likely appear in a scientific journal article.

black

Quick Tip

Pay attention to the tone and diction (word choice) of a passage. Technical terms, a formal tone, and a focus on explaining how and why things work are hallmarks of scientific or academic writing.

---

75. According to the passage, which of the following statements is true of the extent of water loss by the egg during the hatching process?

(A) It exceeds the initial mass of the egg by 15 percent.
(B) It is regulated by a specialized adaptation for conserving water.
(C) It should compensate for the egg's entire water gain during incubation.
(D) It should amount to 15 percent of the egg's water gain during incubation.

Correct Answer: (C) It should compensate for the egg's entire water gain during incubation.

Solution:

Step 1: Understanding the Concept:
This is a detail-oriented question that requires careful reading of the section on water loss. We need to find the statement that is explicitly supported by the text.

Step 2: Key Formula or Approach:
Locate the last paragraph where water loss is discussed and evaluate each option against the information provided there.

Step 3: Detailed Explanation:
The relevant part of the passage states: ...for every gram of fat burned an almost equal mass of metabolic water is generated. Therefore, the relative water content of the egg will increase... unless water is lost. If the relative water content at hatching is to equal that of the freshly laid egg, about 15 percent of the initial mass of the egg must be lost as water.

- (A) It exceeds the initial mass of the egg by 15 percent. This is a misreading. The loss is 15 percent of the initial mass, not in addition to it. False.
- (B) It is regulated by a specialized adaptation for conserving water. The passage states the opposite: Animals have evolved many specialized adaptations for conserving water, but bird eggs seem designed to **lose it** at a controlled rate. False.
- (C) It should compensate for the egg's entire water gain during incubation. The passage explains that metabolic water is produced (a gain) and that water must be lost to bring the relative water content back to the original level. This means the loss compensates for the gain. True.
- (D) It should amount to 15 percent of the egg's water gain during incubation. The passage clearly states the loss is about 15 percent of the **initial mass** of the egg, not 15 percent of the water gain. False.

Step 4: Final Answer:
The statement that is true is that the water loss should compensate for the egg's entire water gain during incubation.

black

Quick Tip

Be very careful with percentages in reading comprehension. Always check what the percentage refers to (e.g., percent of initial mass vs. percent of water gain). This is a common way questions try to trick the reader.

---

76. ZOOM (Select the word that is most nearly opposite in meaning)

(A) Soothe
(B) Plummet
(C) Subjugate
(D) Refute

Correct Answer: (B) Plummet

Solution:

Step 1: Understanding the Concept:
This question asks for the antonym (opposite) of the word ZOOM.

Step 2: Key Formula or Approach:
1. Define the given word.
2. Define the words in the options.
3. Identify the word with the most directly opposite meaning.

Step 3: Detailed Explanation:
- **ZOOM**: To move very quickly, especially with a loud humming sound. It often implies rapid upward or forward movement.
- (A) Soothe: To calm or relieve. Unrelated.
- (B) **Plummet**: To fall or drop straight down at high speed. This is a direct opposite of the upward movement often associated with zoom.
- (C) Subjugate: To conquer or bring under control. Unrelated.
- (D) Refute: To prove something wrong. Unrelated.

Step 4: Final Answer:
The word most nearly opposite in meaning to ZOOM is Plummet.

black

> Quick Tip
>
> Antonyms often exist along a specific axis of meaning. For words describing motion like ZOOM, the opposite will likely be another word for motion, but in the opposite direction (up vs. down, fast vs. slow).

---

77. PREDILECTION (Select the word that is most nearly opposite in meaning)

(A) Antipathy
(B) Ignorance
(C) Dissonance
(D) Disharmony

Correct Answer: (A) Antipathy

Solution:

Step 1: Understanding the Concept:
This question asks for the antonym of the word PREDILECTION.

Step 2: Key Formula or Approach:
1. Define the given word. 2. Define the words in the options. 3. Identify the word with the most directly opposite meaning.

Step 3: Detailed Explanation:
- **PREDILECTION**: A preference or special liking for something; a bias in favor of something.
- (A) **Antipathy**: A deep-seated feeling of dislike or aversion. This is the direct opposite of a liking or preference.
- (B) Ignorance: Lack of knowledge. Unrelated.
- (C) Dissonance: Lack of harmony or agreement. Related to preference, but not a direct opposite.

- (D) Disharmony: Lack of harmony. Similar to dissonance and not the best antonym.

Step 4: Final Answer:
The word most nearly opposite in meaning to PREDILECTION is Antipathy.

black

Quick Tip

Predilection comes from Latin roots meaning to love before (prae + diligere). Antipathy comes from Greek roots meaning to feel against (anti + pathos). Understanding word origins (etymology) can be a powerful tool for vocabulary questions.

---

78. DOCILE (Select the word that is most nearly opposite in meaning)

(A) Unmanageable
(B) Dutiful
(C) Submissive
(D) Painful

Correct Answer: (A) Unmanageable

Solution:

Step 1: Understanding the Concept:
This question asks for the antonym of the word DOCILE.

Step 2: Key Formula or Approach:
1. Define the given word. 2. Define the words in the options. 3. Identify the word with the most directly opposite meaning.

Step 3: Detailed Explanation:
- **DOCILE**: Ready to accept control or instruction; submissive, easy to manage.
- (A) **Unmanageable**: Difficult or impossible to manage or control; unruly. This is a direct opposite.
- (B) Dutiful: Conscientiously or obediently fulfilling one's duty. This is closer to a synonym.
- (C) Submissive: Ready to conform to the authority or will of others. This is a synonym.
- (D) Painful: Causing pain. Unrelated.

Step 4: Final Answer:
The word most nearly opposite in meaning to DOCILE is Unmanageable.

black

Quick Tip

When looking for an antonym, first eliminate any obvious synonyms. In this case, Dutiful and Submissive are similar in meaning to Docile and can be quickly discarded.

---

79. EQUIVOCAL (Select the word that is most nearly opposite in meaning)

(A) Mistaken
(B) Quaint
(C) Clear
(D) Universal

Correct Answer: (C) Clear

Solution:

Step 1: Understanding the Concept:
This question asks for the antonym of the word EQUIVOCAL.

Step 2: Key Formula or Approach:
1. Define the given word. 2. Define the words in the options. 3. Identify the word with the most directly opposite meaning.

Step 3: Detailed Explanation:
- **EQUIVOCAL**: Open to more than one interpretation; ambiguous; unclear.
- (A) Mistaken: Wrong in one's opinion or judgment. Not an opposite.
- (B) Quaint: Attractively unusual or old-fashioned. Unrelated.
- (C) **Clear**: Easy to perceive, understand, or interpret; unambiguous. This is a direct opposite.
- (D) Universal: Relating to or done by all people or things in the world. Unrelated.

Step 4: Final Answer:
The word most nearly opposite in meaning to EQUIVOCAL is Clear.

black

Quick Tip

The root of equivocal is equi-vocal, meaning equal voice, suggesting it speaks with two voices and is therefore unclear. Its opposite would be something that speaks with a single, clear voice.

---

80. PROSAIC (Select the word that is most nearly opposite in meaning)

(A) Pensive
(B) Imaginative
(C) Rhetorical
(D) Pacified

Correct Answer: (B) Imaginative

Solution:

Step 1: Understanding the Concept:
This question asks for the antonym of the word PROSAIC.

Step 2: Key Formula or Approach:
1. Define the given word. 2. Define the words in the options. 3. Identify the word with the most directly opposite meaning.

Step 3: Detailed Explanation:
- **PROSAIC**: Having the style or diction of prose rather than poetry; lacking poetic beauty, commonplace, unromantic, dull.
- (A) Pensive: Engaged in deep or serious thought. Not an opposite.
- (B) **Imaginative**: Having or showing creativity or inventiveness. This is the direct opposite of being dull and commonplace.
- (C) Rhetorical: Relating to the art of effective or persuasive speaking or writing. Not an opposite.
- (D) Pacified: Quieted or calmed. Unrelated.

Step 4: Final Answer:
The word most nearly opposite in meaning to PROSAIC is Imaginative.

black

Quick Tip

Prosaic comes from prose, the ordinary form of written language, as opposed to poetry. Thinking of this prose/poetry distinction helps remember that prosaic means ordinary and unimaginative.

---

81. LEVITY (Select the word that is most nearly opposite in meaning)

(A) Praise
(B) Blame
(C) Solemnity
(D) Frivolity

Correct Answer: (C) Solemnity

Solution:

Step 1: Understanding the Concept:
This question asks for the antonym of the word LEVITY.

Step 2: Key Formula or Approach:
1. Define the given word. 2. Define the words in the options. 3. Identify the word with the most directly opposite meaning.

Step 3: Detailed Explanation:
- **LEVITY**: The treatment of a serious matter with humor or lack of due respect; lightness of mind, character, or behavior.
- (A) Praise: To express warm approval of. Unrelated.
- (B) Blame: To assign responsibility for a fault. Unrelated.
- (C) **Solemnity**: The state or quality of being serious and dignified. This is the direct opposite of levity.
- (D) Frivolity: Lack of seriousness; lightheartedness. This is a synonym of levity.

Step 4: Final Answer:
The word most nearly opposite in meaning to LEVITY is Solemnity.

black

Quick Tip

Levity is related to the word levitate, suggesting lightness. Its opposite is a word suggesting weight or seriousness, like solemnity or gravity.

---

82. OBLOQUY (Select the word that is most nearly the same in meaning)

(A) Praise
(B) Cruel
(C) Slander
(D) Dialogue

Correct Answer: (C) Slander

Solution:

Step 1: Understanding the Concept:
This question asks for the synonym (closest in meaning) of the word OBLOQUY.

Step 2: Key Formula or Approach:
1. Define the given word. 2. Define the words in the options. 3. Identify the word with the most similar meaning.

Step 3: Detailed Explanation:
- **OBLOQUY**: Strong public criticism or verbal abuse; disgrace brought about by public abuse.
- (A) Praise: The opposite of criticism.
- (B) Cruel: Willfully causing pain or suffering to others. While obloquy can be cruel, cruel is a broader term and not a direct synonym.
- (C) **Slander**: The action of making a false spoken statement damaging to a person's reputation. This is a form of verbal abuse and public criticism, making it a very close synonym.
- (D) Dialogue: A conversation between two or more people. Unrelated.

Step 4: Final Answer:
The word most nearly the same in meaning to OBLOQUY is Slander.

black

Quick Tip

Obloquy comes from Latin ob- (against) and loqui (to speak). So it literally means to speak against, which aligns well with criticism, verbal abuse, and slander.

---

83. ELAN (Select the word that is most nearly the same in meaning)

(A) Flair
(B) Spiritual
(C) Inspiration
(D) Boredom

Correct Answer: (A) Flair

Solution:

Step 1: Understanding the Concept:
This question asks for the synonym of the word ELAN.

Step 2: Key Formula or Approach:
1. Define the given word. 2. Define the words in the options. 3. Identify the word with the most similar meaning.

Step 3: Detailed Explanation:
- **ELAN**: Energy, style, and enthusiasm.
- (A) **Flair**: A special or instinctive aptitude or ability for doing something well; stylishness and originality. This combination of style and confidence is very close to elan.

- (B) Spiritual: Relating to the human spirit. Unrelated.
- (C) Inspiration: The process of being mentally stimulated to do or feel something creative. Related, but elan is more about the outward expression of style and energy.
- (D) Boredom: The state of feeling bored. The opposite.

Step 4: Final Answer:
The word most nearly the same in meaning to ELAN is Flair.

black

> Quick Tip
>
> Think of someone performing with elan - they do it with energy, confidence, and a unique style. The word flair captures this same idea.

---

84. GAUCHE (Select the word that is most nearly the same in meaning)

(A) Vain
(B) Rich
(C) Polished
(D) Tactless

Correct Answer: (D) Tactless

Solution:

Step 1: Understanding the Concept:
This question asks for the synonym of the word GAUCHE.

Step 2: Key Formula or Approach:
1. Define the given word. 2. Define the words in the options. 3. Identify the word with the most similar meaning.

Step 3: Detailed Explanation:
- **GAUCHE**: Lacking ease or grace; unsophisticated and socially awkward.
- (A) Vain: Having an excessively high opinion of one's appearance, abilities, or worth. Unrelated.
- (B) Rich: Having a great deal of money or assets. Unrelated.
- (C) Polished: Refined, sophisticated, and elegant. The opposite (antonym).
- (D) **Tactless**: Having or showing a lack of adroitness and sensitivity in dealing with others or with difficult issues. This is a key component of being socially awkward or gauche.

Step 4: Final Answer:
The word most nearly the same in meaning to GAUCHE is Tactless.

black

Quick Tip

Gauche is the French word for left, which historically had connotations of awkwardness (the opposite of droit, meaning right, which gives us adroit). This can help you remember its meaning of being socially clumsy or tactless.

---

85. BROWBEAT (Select the word that is most nearly the same in meaning)

(A) Ambitious
(B) Challenging
(C) Intimidate
(D) Tarnish

Correct Answer: (C) Intimidate

Solution:

Step 1: Understanding the Concept:
This question asks for the synonym of the word BROWBEAT.

Step 2: Key Formula or Approach:
1. Define the given word. 2. Define the words in the options. 3. Identify the word with the most similar meaning.

Step 3: Detailed Explanation:
- **BROWBEAT**: To intimidate (someone), typically into doing something, with stern or abusive words; to bully. - (A) Ambitious: Having a strong desire for success. Unrelated. - (B) Challenging: Testing one's abilities. Unrelated. - (C) **Intimidate**: To frighten or overawe (someone), especially in order to make them do what one wants. This is a direct synonym. - (D) Tarnish: To lose or cause to lose lustre. Unrelated.
Step 4: Final Answer:
The word most nearly the same in meaning to BROWBEAT is Intimidate.

black

Quick Tip

The word browbeat itself provides a strong visual clue: imagine someone beating you with their brow (i.e., with fierce looks and expressions). This image helps connect the word to its meaning of intimidation.

---

86. IMPOSTURE (Select the word that is most nearly the same in meaning)

(A) Claim
(B) Status
(C) Destruction
(D) Deception

Correct Answer: (D) Deception

Solution:

Step 1: Understanding the Concept:
This question asks for the synonym of the word IMPOSTURE.

Step 2: Key Formula or Approach:
1. Define the given word. 2. Define the words in the options. 3. Identify the word with the most similar meaning.

Step 3: Detailed Explanation:
- **IMPOSTURE**: An instance of pretending to be someone else in order to deceive others. The act of being an impostor.
- (A) Claim: An assertion that something is true. Unrelated.
- (B) Status: A person's social or professional standing. Unrelated.
- (C) Destruction: The action of destroying something. Unrelated.
- (D) **Deception**: The action of deceiving someone; a trick.

Imposture is a specific type of deception. This is the best fit.

Step 4: Final Answer:
The word most nearly the same in meaning to IMPOSTURE is Deception.

black

Quick Tip

Think of the related word impostor. An impostor is someone who practices deception by pretending to be someone else. This links imposture directly to deception.

---

87. PROBOSCIS (Select the word that is most nearly the same in meaning)

(A) Search
(B) Probe
(C) Snout
(D) Prove

Correct Answer: (C) Snout

Solution:

Step 1: Understanding the Concept:
This question asks for the synonym of the word PROBOSCIS.

Step 2: Key Formula or Approach:
1. Define the given word. 2. Define the words in the options. 3. Identify the word with the most similar meaning.

Step 3: Detailed Explanation:
- **PROBOSCIS**: The nose of a mammal, especially when it is long and mobile, such as the trunk of an elephant or the snout of a tapir. It can also refer to the elongated mouthparts of an insect.
- (A) Search: To try to find something. Unrelated.
- (B) Probe: To physically explore or examine. A proboscis can be used to probe, but probe is an action, not the body part itself.
- (C) **Snout**: The projecting nose and mouth of an animal such as a dog or pig. This is a direct synonym for a type of proboscis.
- (D) Prove: To demonstrate the truth of something. Unrelated.

Step 4: Final Answer:
The word most nearly the same in meaning to PROBOSCIS is Snout.

black

Quick Tip

Proboscis is a specific biological term. When you see such a term, the synonym is likely to be another, perhaps more common, biological term.

---

88. PARLEY (Select the word that is most nearly the same in meaning)

(A) Discuss
(B) Deliver
(C) Sweeten
(D) Race

Correct Answer: (A) Discuss

Solution:

Step 1: Understanding the Concept:
This question asks for the synonym of the word PARLEY.

Step 2: Key Formula or Approach:
1. Define the given word. 2. Define the words in the options. 3. Identify the word with the most similar meaning.

Step 3: Detailed Explanation:
- **PARLEY**: A conference between opposing sides in a dispute, especially a discussion of terms for an armistice. As a verb, it means to hold such a discussion.
- (A) **Discuss**: To talk about something with another person or group of people. This is the core action of a parley.
- (B) Deliver: To bring and hand over. Unrelated.
- (C) Sweeten: To make sweet or sweeter. Unrelated.
- (D) Race: To compete in a speed contest. Unrelated.

Step 4: Final Answer:
The word most nearly the same in meaning to PARLEY is Discuss.

black

Quick Tip

The word parley comes from the French parler, which means to speak. This origin makes its connection to discuss very clear.

---

89. Pipes are not a safer ..... to cigarettes because, though pipe smokers do not inhale, they are still ..... higher rates of lung and mouth cancers than non-smokers.

(A) alternative - subject to
(B) answer - responsible for
(C) preference - tree from
(D) rejoinder - involved in

Correct Answer: (A) alternative - subject to

Solution:

Step 1: Understanding the Concept:
This is a fill-in-the-blanks question that tests both vocabulary and logical coherence. We need to find the pair of words that best completes the sentence's meaning.

Step 2: Key Formula or Approach:
1. Analyze the sentence structure and the logic of the argument. The sentence sets up a contrast: pipes might seem safer, BUT they are still dangerous. 2. Test each option pair to see if it fits grammatically and logically.

Step 3: Detailed Explanation:
The sentence compares pipes to cigarettes as a potential substitute and then states the health risks associated with them. - The first blank needs a word that means substitute or choice. - The second blank needs a phrase that means at risk of or liable to experience.
Let's test the options: - (A) **alternative - subject to**: Pipes are not a safer **alternative** to cigarettes... they are still **subject to** higher rates of... cancers.
An alternative is a choice or substitute. To be subject to something means to be prone to or affected by it. This pair fits perfectly.
- (B) answer - responsible for: safer answer to cigarettes is awkward phrasing. responsible for higher rates is grammatically okay but less precise than subject to. - (C) preference - tree from: Makes no sense.
- (D) rejoinder - involved in: A rejoinder is a reply. Makes no sense.

Step 4: Final Answer:
The words that best complete the sentence are alternative and subject to.

black

Quick Tip

In sentence completion, check both words in a pair. Often, one word might seem to fit, but the second word makes the option incorrect grammatically or logically. The correct option will have both words fitting perfectly.

---

90. Because of its tendency to ..... most Indian art is ..... Japanese art, where symbols have been minimized and meaning has been conveyed by using the method of the merest suggestion.

(A) overdraw - similar to
(B) understate - reminiscent of
(C) imitate - superior to
(D) sentimentalism - supportive of

Correct Answer: (B) understate - reminiscent of

Solution:

Step 1: Understanding the Concept:
This sentence completion question requires understanding the logical relationship between the first and second clauses. The second half of the sentence describes Japanese art as minimalist (minimized symbols, merest suggestion). The first half connects Indian art to this description.

Step 2: Key Formula or Approach:
1. Decipher the description of Japanese art. It is minimalist and relies on understatement. 2. The sentence structure Because of its tendency to X, Indian art is Y Japanese art implies that

X is a quality of Indian art that makes it comparable (Y) to Japanese art. 3. Therefore, X and Y must be consistent with the description of Japanese art.

Step 3: Detailed Explanation:
The key is that Japanese art uses the merest suggestion. This is a form of understatement.
- For the sentence to be logical, Indian art must share this quality.
- The first blank (the tendency of Indian art) should therefore be something like understate.
- The second blank (the relationship to Japanese art) should be something like similar to or reminiscent of.

Let's test the options:
- (A) overdraw - similar to: This is contradictory. If Indian art tends to overdraw (be overly detailed), it cannot be similar to minimalist Japanese art.
- (B) **understate - reminiscent of**: Because of its tendency to **understate**, most Indian art is **reminiscent of** Japanese art... This is perfectly logical. The shared tendency to understate makes one reminiscent of (or similar to) the other.
- (C) imitate - superior to: The sentence is descriptive, not comparative in terms of quality (superior to).
- (D) sentimentalism - supportive of: These words do not fit the context of minimalism and artistic style described.

Step 4: Final Answer:
The words that best complete the sentence are understate and reminiscent of.

black

Quick Tip

Read the entire sentence, especially the explanatory clause at the end (where symbols have been minimized...). This clause is the key to understanding the intended meaning and finding the words that fit the logic.

---

91. In the absence of native predators, to stop the spread of their population, the imported goats ..... to such an inordinate degree that they over-grazed the countryside and ..... the native vegetation.

(A) thrived - threatened
(B) suffered - abandoned
(C) propagated - cultivated
(D) dwindled - eliminated

Correct Answer: (A) thrived - threatened

Solution:

Step 1: Understanding the Concept:
This sentence completion question describes a cause-and-effect relationship in an ecosystem. The absence of predators leads to an unchecked population growth of imported goats, which in turn has a negative impact on the local environment.

Step 2: Key Formula or Approach:
1. Analyze the logic of the sentence. The absence of native predators is the cause. The effect on the goat population should be positive (growth). The effect on the native vegetation should be negative (damage). 2. Evaluate each option pair based on this logic.

Step 3: Detailed Explanation:
- The first blank describes what the goat population did. In the absence of predators, a population would grow or flourish. Words like thrived or propagated fit. Suffered and dwindled (shrank) are incorrect.
- The second blank describes the effect of over-grazing on native vegetation. Over-grazing would harm or endanger the vegetation. Words like threatened or eliminated fit. Abandoned and cultivated (grown) are incorrect.

Now let's examine the pairs: - **(A) thrived - threatened**: The goats **thrived** (flourished), and this **threatened** (endangered) the native vegetation. This pair is logically perfect.
- (B) suffered - abandoned: Incorrect logic for both words.
- (C) propagated - cultivated: Propagated (bred, increased) is plausible for the first blank, but cultivated is the opposite of what would happen to the vegetation.
- (D) dwindled - eliminated: Dwindled is the opposite of what would happen to the goat population.

Step 4: Final Answer:
The words that best complete the sentence are thrived and threatened.

black

Quick Tip

Look for keywords that signal the logical flow. In the absence of predators is a strong clue that the population in the first blank will increase. Over-grazed is a strong clue that the vegetation in the second blank will be harmed.

---

92. The analysis of anything but ..... the coach's report was, but those of us who have learned to discount such dismal ..... are optimistic.

(A) malicious - benefits
(B) sanguinary - traps
(C) pessimistic - confusion
(D) pleasant - prognostications

Correct Answer: (D) pleasant - prognostications

Solution:

Step 1: Understanding the Concept:
This is a sentence completion problem that hinges on understanding the contrast indicated by the word but and the meaning of the idiom anything but.

Step 2: Key Formula or Approach:
1. Decode the two main clauses of the sentence. Clause 1 describes the coach's report. Clause 2 describes our reaction. 2. The word but signals a contrast. If we are optimistic, the coach's report must have been pessimistic or negative. 3. Anything but X means not X at all. So, anything but [positive word] means negative. 4. Find the word pair that fits this logic.

Step 3: Detailed Explanation:
- The second clause states ...we are optimistic. The word but means the first clause must describe something opposite to optimism.
- The first clause says The analysis of anything but _____ the coach's report was.... This means the coach's report was NOT the word in the first blank.
To make the report negative, the blank must be filled with a positive word. Anything but pleasant means not pleasant at all or unpleasant.
- The second blank is described as dismal _____. Dismal means gloomy or depressing. We are discounting these dismal things. A word meaning predictions or forecasts would fit well.

Let's test the options: - (A) malicious - benefits: Anything but malicious (i.e., not malicious) doesn't create the required negative tone.
- (B) sanguinary - traps: Sanguinary (bloody) is too extreme and doesn't fit the context.
- (C) pessimistic - confusion: Anything but pessimistic means the report was optimistic, which contradicts the logic of the sentence.
- **(D) pleasant - prognostications**: The analysis of anything but **pleasant**... means the report was unpleasant/dismal. ...discount such dismal **prognostications** (predictions)... This fits perfectly. We ignore the coach's dismal predictions and remain optimistic.

Step 4: Final Answer:
The words that best complete the sentence are pleasant and prognostications.

black

Quick Tip

The idiom anything but is a key to solving this. It reverses the meaning of the word that follows it. Anything but happy means sad. Anything but easy means difficult.

---

93. Choose the order of the sentences marked A, B, C, D, and E to form a logical paragraph.

A. 'It's a tricky business', says Allan H. Meltzer, an economist at Carnegie Mellon University and a former economic adviser to President Reagan. B. Some policy-makers are focused on staving off the opposite problem—deflation, or falling prices, as demand weakens to the point that goods pile up without buyers, sending prices down and reducing the incentive for businesses to invest. C. That could shrink demand further and perhaps even deliver the sort of downward spiral that pinned Japan in the weeds of stagnant growth during the 1990s. D. There's no math model that tells us when to do it or how. E. But that, as most economists see it, is a worry for another day.

(A) ABCED
(B) ACDEB
(C) BCDEA
(D) ADEBC

Correct Answer: (C) BCDEA

Solution:

Step 1: Understanding the Concept:
This is a paragraph jumble question. We need to arrange the five sentences into a coherent and logically flowing paragraph.

Step 2: Key Formula or Approach:
1. Identify the topic sentence, which introduces the main idea. 2. Look for links between sentences, such as pronouns (that, it), transition words (but, in turn), and logical progression of ideas (problem -¿ explanation -¿ solution/conclusion). 3. Form mandatory pairs or blocks of sentences. 4. Test the given options against the logical flow.

Step 3: Detailed Explanation:
1. **Identify the Topic**: The paragraph is about the economic problem of deflation.
2. **Find the Opening Sentence**: Sentence B introduces the main topic, deflation, and explains what it is. This is a strong candidate for the opening sentence.
3. **Form a Link**: Sentence C begins with That could shrink demand further.... That clearly refers to the deflation described in sentence B. Therefore, **B-C is a mandatory pair**. This pair describes the problem and its potential consequences.
4. **Analyze the Quotes**: Sentences A and D are quotes. D (There's no math model...) explains why dealing with the problem is difficult. A (It's a tricky business) is a general statement of difficulty. D seems to elaborate on the difficulty of the problem discussed in B-C.
5. **Analyze the Concluding Sentence**: Sentence E begins with But that... is a worry for another day. This sentence serves to downplay the immediate threat of the problem, making it a good concluding thought.
6. **Assemble the Paragraph**: A logical flow is:
- **B**: Introduce the problem of deflation.
- **C**: Explain the serious consequences of deflation.
- **D**: State why it's a difficult problem to handle (no math model).
- **E**: Downplay the immediate urgency (a worry for another day). - **A**: A general, summarizing quote about the difficulty (a tricky business). This gives the sequence **BCDEA**.

Step 4: Final Answer:
The logical order of the sentences is BCDEA.

black

> Quick Tip
>
> In paragraph jumbles, identifying the introductory sentence is the most critical first step. After that, look for pronoun-antecedent pairs (like That in sentence C referring to deflation in B) to form concrete links.

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94. Choose the order of the sentences marked A, B, C, D, and E to form a logical paragraph.
A. Early in August, as his jeep wound its way through the piles of burning tyres that angry protestors had used to barricade the road from Srinagar airport into the city, former Chief Minister Farooq Abdullah, turned to a journalist sitting next to him with a smile on his face. B. So," he said, are you here to write another article about how I don't know how to run a government? C. Having emerged as the single largest party in the J&K Assembly, with 28 seats in a house of 87, the National Conference has the undeniable right to form and lead the government. D. To do so, however, it will need the support of the Congress, which has picked up 17 seats. E. More likely than not, Dr. Abdullah's leadership – or that of Jammu and Kashmir National Conference President, his son Omar Abdullah – will soon be put to the test.

(A) ABECD
(B) ABDEC
(C) ADEBC
(D) ABCED

Correct Answer: (D) ABCED

Solution:

Step 1: Understanding the Concept:
This is a paragraph jumble question where the sentences form a short narrative or news report. We need to arrange them in a logical sequence.

Step 2: Key Formula or Approach:
Look for chronological and logical flow. A typical news report structure starts with an anecdote or a hook, provides background/context, and ends with a concluding thought or future outlook.

Step 3: Detailed Explanation:
1. **Find the Opening**: Sentence A sets a vivid scene and introduces the main character, Farooq Abdullah. It functions as a perfect narrative hook.
2. **Form a Link**: Sentence B is a direct quote from Abdullah, continuing the scene from A. he said refers to Abdullah in A. Thus, **A-B is a mandatory pair**.

3. **Provide Context**: After the personal anecdote in A-B, a logical next step is to provide the political background. Sentence C does this by explaining the election results and the National Conference's position.
4. **Elaborate on Context**: Sentence D continues from C, explaining the next logical step: the need for a coalition partner (the Congress). Thus, **C-D is a mandatory pair**.
5. **Conclude**: Sentence E provides a forward-looking conclusion, stating that Abdullah's leadership will be put to the test. This naturally follows the political situation described in C and D.
6. **Assemble the Paragraph**: The complete, logical flow is the anecdote (A-B), followed by the political context (C-D), and finally the conclusion (E). This gives the sequence **ABCED**.

Step 4: Final Answer:
The logical order of the sentences is ABCED.

black

Quick Tip

Paragraphs that tell a story often follow a chronological or narrative structure. Look for a clear beginning (setting the scene), middle (developing the situation), and end (providing a conclusion or looking ahead).

---

95. Choose the order of the sentences marked A, B, C, D, and E to form a logical paragraph.
A. This is the time of the year when people go out and shop for their winter wear. B. But it seems economic recession has hit the fashion industry as well. C. We haven't seen exclusive fashion shows from big designers this winter. D. Designer Sandeep Khosla agrees, "Every industry has been hit and fashion is no different. E. Its effect could be seen on both couture and readymade segments.

(A) ADBCE
(B) ABCDE
(C) AEDBC
(D) BCDEA

Correct Answer: (B) ABCDE

Solution:

Step 1: Understanding the Concept:
This is a paragraph jumble question. The sentences discuss a single topic, and we need to arrange them to form a coherent argument.

Step 2: Key Formula or Approach:
Identify the general topic sentence, then look for sentences that provide specific examples, ev-

idence, or supporting quotes, arranging them in a logical top-down manner (general idea -¿ specific details).

Step 3: Detailed Explanation:
1. **Opening Sentence**: Sentence A sets the general context: it's winter shopping season. This is a good, broad introduction.
2. **Introducing the Main Point**: Sentence B uses the contrast word But to introduce the central theme: the economic recession affecting the fashion industry. A-B forms a logical opening pair.
3. **Providing Evidence**: Sentence C provides a specific piece of evidence for the claim made in B: We haven't seen exclusive fashion shows.... This is a logical follow-up to B.
4. **Supporting Quote**: Sentence D introduces a quote from a designer who agrees. Agrees with what? With the idea presented in B and C that the industry has been hit. So, D should follow C.
5. **Adding Detail/Concluding**: Sentence E elaborates on the effect of the recession (Its effect...). Its refers to the recession mentioned in B. This sentence could fit after B, but it also works well as a concluding summary of the impact after the evidence has been presented. The flow A -¿ B -¿ C -¿ D -¿ E is very smooth: Context -¿ Problem -¿ Evidence -¿ Support -¿ Elaboration.

Step 4: Final Answer:
The logical order of the sentences is ABCDE.

black

Quick Tip

A common paragraph structure is Introduction -¿ Thesis/Main Point -¿ Evidence/Example 1 -¿ Evidence/Example 2 -¿ Conclusion. Look for this pattern when arranging jumbled sentences.

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96. Choose the order of the sentences marked A, B, C, D, and E to form a logical paragraph.
A. And, in turn, corporate houses seek employees who will benefit their company and help the company grow. B. It is an exchange of value. C. Both sides are seeking to benefit. D. Since we are on the eager prospective employee side, we need to please and satisfy our potential employers. E. One seeks employment for personal gain, profit and success.

(A) ABCED
(B) BCDEA
(C) EABCD
(D) DEABC

Correct Answer: (C) EABCD

Solution:

Step 1: Understanding the Concept:
This paragraph jumble explains the two-sided nature of the employment relationship. We need to arrange the sentences to build this argument logically.

Step 2: Key Formula or Approach:
Identify the two sides being discussed. The paragraph should first introduce one side, then the other, then discuss their interaction, and finally draw a conclusion.

Step 3: Detailed Explanation:
1. **Opening Sentence**: Sentence E introduces the perspective of the job seeker (One seeks employment for personal gain...). This is a good starting point as it defines one of the two parties.
2. **Introducing the Other Side**: Sentence A introduces the perspective of the employer (corporate houses seek employees...). The phrase And, in turn shows that this is the other side of the coin presented in E. So, **E-A is a strong pair**.
3. **Synthesizing the Two Sides**: Sentence C (Both sides are seeking to benefit.) logically follows E and A, as these two sentences have just defined the both sides.
4. **Generalizing the Interaction**: Sentence B (It is an exchange of value.) provides a general, abstract summary of the situation described in E, A, and C. It's a good summary statement.
5. **Concluding Thought**: Sentence D (Since we are on the eager prospective employee side...) brings the focus back to the employee's perspective and offers a concluding piece of advice. This is a natural conclusion to the paragraph.
6. **Assemble the Paragraph**: The flow is E (employee's motive) -¿ A (employer's motive) -¿ C (common motive) -¿ B (summary of interaction) -¿ D (conclusion for the employee). This gives the sequence **EABCD**.

Step 4: Final Answer:
The logical order of the sentences is EABCD.

black

Quick Tip

Look for sentences that define the key actors or concepts first. Sentences that synthesize or summarize (like Both sides... or It is...) usually come after the concepts they refer to have been introduced.

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97. One or more of the sentences (A, B, C, D) is/are incorrect considering standard English usage. Identify the incorrect sentence(s).
A. The rightfully believing that his geniuses in poetry laid in personal utterances, Irish poet William Butler Yeats recognized that these personal utterances alone could not organize a body of a lyric poetry and drama into the organic structure he hoped to build. B. For one thing personal utterances is beset by danger of sentimentality, which leads poetry away from that

reality that poetry would deal with various kinds of self-pity and self-deceptions. C. He thus has to technique by which the person could some how be objectified, be given the appearance of impersonal "truth" and yet retained- motive force of privately felt belief. D. The partial solution was the theory the mask.

(A) B, C and D
(B) A, C and D
(C) A, B, C and D
(D) A and B

Correct Answer: (C) A, B, C and D

Solution:

Step 1: Understanding the Concept:
This question requires identifying grammatical errors in four given sentences. The errors can relate to subject-verb agreement, word form, punctuation, or sentence structure.

Step 2: Key Formula or Approach:
Read each sentence carefully, checking for common grammatical mistakes.

Step 3: Detailed Explanation:
- **Sentence A**: The rightfully believing... is an incorrect grammatical construction. It should be Rightfully believing.... Also, a body of a lyric poetry is incorrect; it should be a body of lyric poetry (poetry is uncountable). Thus, **A is incorrect**.
- **Sentence B**: The subject is personal utterances (plural), but the verb used is is (singular). It should be utterances are beset.... Thus, **B is incorrect**.
- **Sentence C**: He thus has to technique... is missing a verb. It should be something like He thus has to find a technique.... some how should be one word, somehow. The end of the sentence is also fragmented. Thus, **C is incorrect**.
- **Sentence D**: the theory the mask is grammatically incomplete. It needs a preposition, such as the theory of the mask. Thus, **D is incorrect**.

Step 4: Final Answer:
All four sentences, A, B, C, and D, contain grammatical errors.

black

Quick Tip

When checking for errors, look for the big four: Subject-Verb Agreement, Pronoun consistency, Tense consistency, and Correct use of modifiers/phrases. These cover the majority of errors in such questions.

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98. One or more of the sentences (A, B, C, D) is/are incorrect considering standard English usage. Identify the incorrect sentence(s).
A. In the long history of the world, only a few generations have been granted the role of defending freedom in its hour of maximum danger. B. I do not believe that any of us would exchange places with any other people or any other generation. C. The energy, the faith, the devotion which we bring to this endeavor will light our country and all who serve it. D. The glow from that fire can truly light the world.

(A) B only
(B) A only
(C) C only
(D) No error

Correct Answer: (D) No error

Solution:

Step 1: Understanding the Concept:
We need to analyze each sentence for grammatical correctness. These sentences are famous excerpts from John F. Kennedy's inaugural address.

Step 2: Key Formula or Approach:
Examine each sentence for errors in grammar, syntax, and punctuation.

Step 3: Detailed Explanation:
- **Sentence A**: In the long history of the world, only a few generations have been granted the role of defending freedom in its hour of maximum danger. The grammar and structure are correct. its correctly refers to freedom.
- **Sentence B**: I do not believe that any of us would exchange places with any other people or any other generation. The sentence is grammatically sound.
- **Sentence C**: The energy, the faith, the devotion which we bring to this endeavor will light our country and all who serve it. The subject (energy, faith, devotion) agrees with the verb (will light). The relative pronoun which is used correctly. The sentence is correct.
- **Sentence D**: The glow from that fire can truly light the world. This is a simple, grammatically correct sentence.

Step 4: Final Answer:
All four sentences are grammatically correct. Therefore, there is no error.

black

Quick Tip

Exam questions sometimes use famous quotes or excerpts from literature. While you don't need to recognize them, these sentences are often grammatically correct and are used to test if you can spot a no error option confidently.

99. One or more of the sentences (A, B, C, D) is/are incorrect considering standard English usage. Identify the incorrect sentence(s).
A. As the growing economy makes increasing demands on infrastructure inputs, these problems could worsen in the coming year. B. Therefore, addressing infrastructure gaps needs to doing our topmost priority next year. C. The second risk lies in the global macroeconomic imbalances, reflected in the twin deficits of the US and rising surpluses of Asia. D. The longer these imbalances have persisted, the greater has become the risk of disruptive correction.

(A) A only
(B) B only
(C) C only
(D) D only

Correct Answer: (B) B only

Solution:

Step 1: Understanding the Concept:
We need to identify the sentence with a grammatical error.

Step 2: Key Formula or Approach:
Analyze each sentence for correct verb forms, idioms, and sentence structure.

Step 3: Detailed Explanation:
- **Sentence A**: As the growing economy makes..., these problems could worsen... This sentence is grammatically correct.
- **Sentence B**: Therefore, addressing infrastructure gaps needs to doing our topmost priority next year. This sentence contains a grammatical error. The construction needs to doing is incorrect. The correct forms would be needs to be our topmost priority or is our topmost priority.
The verb needs should be followed by an infinitive (to be), not a gerund (doing) in this context. Thus, **B is incorrect**.
- **Sentence C**: The second risk lies in..., reflected in... This sentence is grammatically correct. The participle reflected correctly modifies imbalances.
- **Sentence D**: The longer these imbalances have persisted, the greater has become the risk... This is a correct use of the comparative structure (the longer..., the greater...). The sentence is correct.

Step 4: Final Answer:
Only sentence B is incorrect.

black

Quick Tip

Pay close attention to verb patterns. Certain verbs must be followed by an infinitive (to + verb), while others are followed by a gerund (verb + -ing). Needs in this structure requires an infinitive. For example, The car needs to be washed, not The car needs to washing.

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100. One or more of the sentences (A, B, C, D) is/are incorrect considering standard English usage. Identify the incorrect sentence(s).
A. A day after a controversy broke out over medicines manufactured by the guru, the Health Ministry said that they would put the medicines to the test. B. The government will not scrap the Delhi-Mumbai airport modernization plan. C. In the district town, the children told the committee members that they were not consuming the meals served by the schools. D. The committee would keep watch on the quality of grain.

(A) B only
(B) D only
(C) A only
(D) A only

Correct Answer: (C) A only

Solution:

Step 1: Understanding the Concept:
We must identify any sentence with a grammatical or usage error.

Step 2: Key Formula or Approach:
Analyze each sentence for clarity, pronoun reference, and standard usage.

Step 3: Detailed Explanation:
- **Sentence A**: ..., the Health Ministry said that they would put the medicines to the test. This sentence has a potential pronoun ambiguity. The Health Ministry is a singular collective noun.
While using they to refer to an organization is common in informal English, in formal writing, it is often preferred. More importantly, they could ambiguously refer to the Ministry, the people who manufactured the medicines, or someone else.
This ambiguity makes the sentence weak and arguably incorrect in a formal context.
- **Sentence B**: The government will not scrap the Delhi-Mumbai airport modernization plan. This sentence is grammatically correct and clear.
- **Sentence C**: In the district town, the children told the committee members that they were not consuming the meals served by the schools. The pronoun they clearly refers to the children. The sentence is correct.
- **Sentence D**: The committee would keep watch on the quality of grain. The idiom keep watch

on is acceptable, meaning to monitor or observe. The sentence is correct.

Given that an error must be found, the pronoun ambiguity in sentence A is the most likely intended error.

Step 4: Final Answer:
Sentence A is the incorrect sentence due to pronoun ambiguity.

black

Quick Tip

In error spotting, always check for pronoun antecedent clarity. A pronoun should refer clearly and unambiguously to a single, specific noun. If a pronoun like they, it, or this could refer to more than one thing, the sentence is likely flawed.

---

101. I prefer The Hindu. (a)/ but my eldest (b)/ son reads (c)/ Times of India (d).

(A) I prefer The Hindu
(B) but my eldest
(C) son reads
(D) Times of India

Correct Answer: (D) Times of India

Solution:

Step 1: Understanding the Concept:
This question tests the use of articles, specifically the definite article the, with proper nouns like the names of newspapers.

Step 2: Key Formula or Approach:
The names of newspapers, journals, and magazines generally require the definite article the before them.

Step 3: Detailed Explanation:
- Part (a): The Hindu is correct, as it includes the definite article. - Parts (b) and (c) are grammatically correct. - Part (d): Times of India is the name of a newspaper. It should be written as **the** Times of India. The article is missing.
Step 4: Final Answer:
The error is in part (d) of the sentence.

black

Quick Tip

Remember the general rule: use the before the names of newspapers, oceans, rivers, mountain ranges, and groups of islands.

---

102. He was wearing shabby (a)/ faded trouser (b)/ which he explained, were called jeans (c)/ and cost (d) a fortune.

(A) shabby
(B) faded trouser
(C) were called jeans
(D) cost a fortune

Correct Answer: (B) faded trouser

Solution:

Step 1: Understanding the Concept:
This question tests the use of nouns that are typically used in the plural form (pluralia tantum).

Step 2: Key Formula or Approach:
Words for items of clothing that have two parts, like trousers, pants, shorts, and glasses, are generally used in the plural form.

Step 3: Detailed Explanation:
- Part (b): trouser is used in the singular. The correct form for this item of clothing is the plural trousers. - The plural verb were in part (c) correctly agrees with the intended plural subject trousers. The error lies in writing the noun itself in the singular.
Step 4: Final Answer:
The error is in part (b), which should be faded trousers.

black

Quick Tip

Be aware of nouns that exist only or usually in the plural form, such as trousers, scissors, pliers, glasses, and congratulations. They always take a plural verb.

---

103. He has become (a)/ so weak that even (b)/ a two furlongs (c)/ walk makes him breathless (d).

(A) has become
(B) so weak that even

(C) a two furlongs
(D) breathless

Correct Answer: (C) a two furlongs

Solution:

Step 1: Understanding the Concept:
This question tests the formation of compound adjectives, specifically when a number and a unit of measurement are used to modify a noun.

Step 2: Key Formula or Approach:
When a phrase consisting of a number and a noun (e.g., two furlongs) is used as an adjective before another noun (e.g., walk), the noun in the adjectival phrase should be in the singular form.

Step 3: Detailed Explanation:
- Part (c): The phrase a two furlongs modifies the noun walk. It is acting as a compound adjective. - The correct form for such a compound adjective is to use the singular form of the unit. It should be a two-furlong walk. - The use of the plural furlongs is incorrect in this context.
Step 4: Final Answer:
The error is in part (c). It should be a two-furlong.

black

Quick Tip

Think of other examples: we say a five-star hotel (not five-stars), a ten-page report (not ten-pages), and a three-year-old child (not three-years-old) when the phrase acts as an adjective before a noun.

---

104. A picture of one of the progenitors (a)/ of the founder (b)/ of the company hanged (c)/ on the wall (d).

(A) progenitors
(B) founder
(C) hanged
(D) on the wall

Correct Answer: (C) hanged

Solution:

Step 1: Understanding the Concept:
This question tests the correct usage of the past tense and past participle forms of the verb to hang.

Step 2: Key Formula or Approach:
The verb to hang has two different past forms depending on the meaning: - For execution of a person by hanging, the past form is **hanged**. - For suspending an object, the past form is **hung**.

Step 3: Detailed Explanation:
- The sentence is about a picture being suspended on a wall. - Therefore, the correct past participle is hung. - Part (c) uses hanged, which is incorrect in this context. It should be hung.
Step 4: Final Answer:
The error is in part (c).

black

> Quick Tip
>
> A simple mnemonic to remember the difference: Curtains are hung, but people are hanged.

---

105. His secretary told me (a)/ that she was unable to tell us when (b)/ her boss would return back (c)/ from his work (d).

(A) told me
(B) when
(C) return back
(D) from his work

Correct Answer: (C) return back

Solution:

Step 1: Understanding the Concept:
This question tests for redundancy, which is the unnecessary repetition of words or ideas.

Step 2: Key Formula or Approach:
Identify words or phrases that mean the same thing and are used together unnecessarily. These are called tautologies or pleonasms.

Step 3: Detailed Explanation:
- The verb return inherently means to come or go back. - The phrase return back in part (c) is therefore redundant, as it essentially means go back back. - The correct phrasing would be simply her boss would return.

Step 4: Final Answer:
The error is the redundant phrase return back in part (c).

black

> Quick Tip
>
> Be on the lookout for common redundant phrases in error-spotting questions, such as repeat again, free gift, past history, and final outcome.

---

106. Identify the best way of writing the sentence: When one reads the Hindi literature of the twentieth century, you find a striking contrast between the writings of Munshi Premchand and later day writers of popular Hindi fiction.

(A) When one reads the Hindi literature of the twentieth century, you find a striking contrast between the writings of Munshi Premchand and later day writers of popular Hindi fiction.
(B) When one reads the Hindi literature of the twentieth century, he finds a striking contrast between the writings of Munshi Premchand and later day writers of popular Hindi fiction.
(C) When you read the Hindi literature of the twentieth century, one finds a striking contrast between the writings of Munshi Premchand and later day writers of popular Hindi fiction.
(D) If one reads the Hindi literature of the twentieth century, you find a striking contrast between the writings of Munshi Premchand and later day writers of popular Hindi fiction.

Correct Answer: (B) When one reads the Hindi literature of the twentieth century, he finds a striking contrast between the writings of Munshi Premchand and later day writers of popular Hindi fiction.

Solution:

Step 1: Understanding the Concept:
This question tests pronoun consistency. The pronouns used to refer to the same person or entity within a sentence should not shift without reason.

Step 2: Key Formula or Approach:
The original sentence starts with the impersonal pronoun one and then incorrectly shifts to the second-person pronoun you. A correct sentence must use a consistent pronoun throughout (e.g., one... one finds or you... you find or one... he/she finds).

Step 3: Detailed Explanation:
- (A) one ... you: Incorrect pronoun shift. - **(B) one ... he finds**: Correct. he is a standard, though traditionally gendered, pronoun used to follow one for consistency. One finds would also be correct. - (C) you ... one: Incorrect pronoun shift. - (D) one ... you: Incorrect pronoun shift.
Step 4: Final Answer:
Option (B) provides the most grammatically sound and consistent sentence.

black

Quick Tip

Avoid shifting between pronouns like 'one', 'you', and 'they' when referring to the same antecedent in a sentence. Maintain a consistent point of view.

---

107. Identify the best way of writing the sentence: No officer had ought to be put into a situation where he has to choose between his love for his family and the responsibilities accompanying his duty.

(A) No officer had ought to be put into a situation where he has to choose between his love for his family and the responsibilities accompanying his duty.
(B) No officer should be put into a situation where he has to choose between his love for his family and the responsibilities accompanying his duty.
(C) No officer should had to be put into a situation in which he has to choose between his love for his family and the responsibilities accompanying his duty.
(D) No officer ought to be put into a situation in which he has to choose between his love for his family and the responsibilities accompanying his duty.

Correct Answer: (D) No officer ought to be put into a situation in which he has to choose between his love for his family and the responsibilities accompanying his duty.

Solution:

Step 1: Understanding the Concept:
This question tests the correct usage of modal auxiliary verbs, specifically ought to.

Step 2: Key Formula or Approach:
The phrase had ought is non-standard and incorrect. The correct modal is simply ought to. We need to find the option that corrects this error properly.

Step 3: Detailed Explanation:
- (A) had ought to be: Incorrect usage.
- (B) should be put: This is grammatically correct and is a possible replacement.
- (C) should had to be put: Incorrect verb construction.
- **(D) ought to be put**: This is the most direct and accurate correction of the original sentence's error, preserving the specific modal verb ought which conveys a strong sense of moral obligation.

Comparing (B) and (D), both are correct sentences. However, (D) is a better choice because it corrects the error in the original sentence (had ought) while maintaining the intended strength and meaning of the modal verb ought to.

Step 4: Final Answer:
Option (D) is the best way of writing the sentence.

black

> Quick Tip
>
> Modal verbs like 'can', 'could', 'may', 'might', 'should', 'ought to', 'must' do not change form for tense or person and are followed by the base form of a verb. They are not preceded by 'to' or 'had'.

---

108. Identify the best way of writing the sentence: Entertainment being recognized as an important factor in improving mental and physical health and thereby reducing human misery and poverty.

(A) Entertainment being recognized as an important factor in improving mental and physical health and thereby reducing human misery and poverty.
(B) Recognition of it being an important factor in improving mental and physical health entertainment reduces human misery and poverty.
(C) Recognizing entertainment as an important factor in improving mental and physical health and thereby reducing human misery and poverty.
(D) Entertainment is recognized as an important factor in improving mental and physical health and thereby reducing human misery and poverty.

Correct Answer: (D) Entertainment is recognized as an important factor in improving mental and physical health and thereby reducing human misery and poverty.

Solution:

Step 1: Understanding the Concept:
This question tests the ability to identify and correct a sentence fragment.

Step 2: Key Formula or Approach:
A complete sentence must have at least one independent clause, which contains a subject and a predicate (a main verb). The original sentence is a participial phrase and lacks a main verb.

Step 3: Detailed Explanation:
- (A) This is the original sentence fragment. Incorrect.
- (B) This sentence is awkwardly constructed and lacks a clear subject-verb relationship. Recognition is a noun, but it doesn't have a verb attached to it. Incorrect.
- (C) This is also a sentence fragment, starting with a participle (Recognizing...). Incorrect.
- **(D) Entertainment is recognized...**: This is a complete, grammatically correct sentence. Entertainment is the subject, and is recognized is the main verb.

Step 4: Final Answer:
Option (D) is the only complete and correctly structured sentence.

black

> Quick Tip
>
> To check if something is a sentence, ask Who or what is doing the action? (the subject) and What is the action? (the main verb). If you can't find both, it's likely a fragment.

---

109. Identify the best way of writing the sentence: Ever since the sting operation, there has been much opposition from they who maintain that it was an unauthorized act.

(A) Ever since the sting operation, there has been much opposition from they who maintain that it was an unauthorized act.
(B) Ever since the sting operation, there has been much opposition from those who maintain that it was an unauthorized act.
(C) Ever since the sting operation, there has been much opposition from they who maintain that it had been an unauthorized act.
(D) Ever since the sting operation, there has been much opposition from those maintaining that it was an unauthorized act.

Correct Answer: (B) Ever since the sting operation, there has been much opposition from those who maintain that it was an unauthorized act.

Solution:

Step 1: Understanding the Concept:
This question tests correct pronoun usage, specifically the case of the pronoun and its function as an antecedent.

Step 2: Key Formula or Approach:
The pronoun is the object of the preposition from, so it should be in the objective case. However, it also acts as the antecedent for the relative pronoun who. The correct pronoun to use in the structure [preposition] ... who [verb] is those.

Step 3: Detailed Explanation:
- (A) from they who: Incorrect. They is the nominative case and cannot be the object of from.
- **(B) from those who**: Correct. Those is the standard pronoun to use in this structure.
- (C) from they who: Incorrect case for the pronoun.
- (D) from those maintaining: This is grammatically acceptable, using a participle instead of a relative clause.

However, option (B) with the relative clause who maintain is often considered clearer and more

formal. Between (B) and (D), (B) is the stronger choice.

Step 4: Final Answer:
Option (B) provides the most standard and correct phrasing.

black

> Quick Tip
>
> Remember the phrase those who... as a standard and correct way to refer to a group of people defined by a certain action or characteristic.

---

110. Identify the best way of writing the sentence: If we cooperate together by dividing up the booty, we shall be able to work together smoothly in the future.

(A) If we cooperate by dividing up the booty, we shall be able to work together smoothly in the future.
(B) If we cooperate together by dividing up the booty, we shall be able to work together smoothly in the future.
(C) If we cooperate by dividing up the booty together, we shall be able to work together smoothly in the future.
(D) If we cooperate with each other by dividing the booty, we shall be able to work together smoothly in the future.

Correct Answer: (A) If we cooperate by dividing up the booty, we shall be able to work together smoothly in the future.

Solution:

Step 1: Understanding the Concept:
This question focuses on redundancy in language. We need to choose the sentence that is most concise and avoids unnecessary repetition.

Step 2: Key Formula or Approach:
The verb cooperate means to work together. Therefore, adding the adverb together after it (cooperate together) is redundant.

Step 3: Detailed Explanation:
- The original sentence and option (B) contain the redundant phrase cooperate together.
- Option (D) contains the redundant phrase cooperate with each other.
- Option (C) moves together but the sentence remains clunky.
- **Option (A)** corrects the primary redundancy by simply saying If we cooperate. This makes the sentence more concise and grammatically sound. The phrase work together later in the sentence is not redundant in the same way, as it refers to a future action.

(Note: The OCR shows options A and B as identical. Assuming this is an error and that option A was intended to be the corrected version without together, it is the best choice.)

Step 4: Final Answer:
Option (A) is the best choice as it removes the key redundancy from the original sentence.

black

Quick Tip

Good writing is concise. Always look for opportunities to remove redundant words like in cooperate together, basic fundamentals, or completely surrounded.

---

111. Recently, the Cabinet Committee on Economic Affairs hiked the cap on foreign investment in the broadcast sector to:

(A) 74 per cent
(B) 49 per cent
(C) 26 per cent
(D) 60 per cent

Correct Answer: (A) 74 per cent

Solution:

Step 1: Understanding the Concept:
This is a general knowledge question related to economic policy in India around the year 2012.

Step 2: Key Formula or Approach:
Recall or search for information about Foreign Direct Investment (FDI) policy changes in India's broadcasting sector during that period.

Step 3: Detailed Explanation:
In September 2012, the Government of India announced a series of reforms to its FDI policy. A key change was the increase of the foreign investment cap in several broadcast carriage services, including Direct-to-Home (DTH), cable TV networks, and Mobile TV, from 49% to **74%**. This was a significant policy update at the time.
Step 4: Final Answer:
The cap was hiked to 74 per cent.

black

Quick Tip

For current affairs questions from past papers, it's important to frame your search or knowledge recall around the specific year of the exam (in this case, 2012). Policies and facts can change over time.

---

112. India's first newspaper was:

(A) Amrita Bazar Patrika
(B) Vande Mataram
(C) Bengal Gazette
(D) Rast Goftar

Correct Answer: (C) Bengal Gazette

Solution:

Step 1: Understanding the Concept:
This is a question of historical general knowledge.

Step 2: Key Formula or Approach:
Recall historical facts about the origins of the press in India.

Step 3: Detailed Explanation:
India's first newspaper was *Hicky's Bengal Gazette*, an English-language weekly published in Calcutta (now Kolkata). It was started by James Augustus Hicky in 1780. It was a pioneer in Indian journalism.
Step 4: Final Answer:
India's first newspaper was the Bengal Gazette.

black

Quick Tip

Key firsts in history, science, and culture are common topics for general knowledge questions. Knowing the first newspaper, the first president, the first satellite, etc., is always useful.

---

113. The biggest producer of diamond in the world is:

(A) Russia
(B) South Africa
(C) Canada

(D) Botswana

Correct Answer: (A) Russia

Solution:

Step 1: Understanding the Concept:
This is a general knowledge question about global mineral production. The answer can vary by year, so it's important to consider the context of 2012.

Step 2: Key Formula or Approach:
Recall or search for data on diamond production by country for the year 2012. Production can be measured by volume (carats) or value.

Step 3: Detailed Explanation:
In the years leading up to and including 2012, Russia emerged as the world's largest diamond producer by volume, primarily through the state-controlled company ALROSA. While Botswana was a major producer, especially in terms of value, Russia had overtaken it in terms of total carats produced. Given the options, Russia is the most accurate answer for the biggest producer in general terms for that period.
Step 4: Final Answer:
The biggest producer of diamond in the world is Russia.

black

Quick Tip

For questions about the biggest or largest producer of a commodity, remember that this can be measured by volume or value, and the top country can change from year to year. Russia (volume) and Botswana (value) have historically been top contenders.

---

114. When coat/blanket is beaten by the stick, the dust particles are removed. This is an example of:

(A) Newton's first law of motion
(B) Newton's second law of motion
(C) Newton's third law of motion
(D) Newton's first law of gravitation

Correct Answer: (A) Newton's first law of motion

Solution:

Step 1: Understanding the Concept:
This question asks to identify the physical principle behind a common phenomenon.

Step 2: Key Formula or Approach:
Recall the definitions of Newton's laws of motion. - **First Law (Law of Inertia)**: An object at rest stays at rest and an object in motion stays in motion with the same speed and in the same direction unless acted upon by an unbalanced force. - **Second Law**: F = ma (Force equals mass times acceleration). - **Third Law**: For every action, there is an equal and opposite reaction.

Step 3: Detailed Explanation:
Initially, both the blanket and the dust particles are at rest. When the blanket is hit with a stick, a force is applied to the blanket, causing it to move abruptly. However, due to inertia (specifically, the inertia of rest), the dust particles tend to remain in their state of rest. As the blanket moves away from them, the dust particles are separated and fall due to gravity. This phenomenon is a direct illustration of Newton's First Law of Motion.
Step 4: Final Answer:
This is an example of Newton's first law of motion.

black

Quick Tip

Classic examples of inertia (Newton's First Law) often involve a sudden change in motion for one object, leaving another object behind due to its tendency to maintain its state of motion (or rest).

---

115. Shome Committee recently submitted its report to the Union Finance Minister. The report is related to:

(A) Coal mine allocation
(B) GAAR
(C) Banking reform
(D) Privatisation of Railways

Correct Answer: (B) GAAR

Solution:

Step 1: Understanding the Concept:
This is a general knowledge question about a specific government committee in India from around 2012.

Step 2: Key Formula or Approach:
Recall or search for the purpose and recommendations of the Parthasarathi Shome Committee.

Step 3: Detailed Explanation:
In 2012, the Indian government's proposal for a **General Anti-Avoidance Rule (GAAR)** in its budget caused significant concern among foreign investors. To address these concerns, Prime Minister Manmohan Singh appointed an expert committee headed by economist Dr. Parthasarathi Shome. The committee's mandate was to review the proposals and suggest a way forward. The committee recommended delaying the implementation of GAAR and softening some of its provisions.
Step 4: Final Answer:
The Shome Committee report is related to GAAR.

black

Quick Tip

Major government committees, especially those related to significant economic or legal reforms, are a frequent topic in general knowledge sections of competitive exams.

---

116. World's oldest peak, Guru Shikhar, is the highest peak of which of the following mountain ranges?

(A) Purvanchal
(B) Aravali Range
(C) Satpura
(D) Shiwaliks

Correct Answer: (B) Aravali Range

Solution:

Step 1: Understanding the Concept:
This is a geography question that asks to associate a specific peak with its mountain range.

Step 2: Key Formula or Approach:
Recall geographical facts about major peaks and mountain ranges in India.

Step 3: Detailed Explanation:
The premise World's oldest peak, Guru Shikhar contains a factual inaccuracy; the Aravalli Range is one of the world's oldest fold mountain systems, but Guru Shikhar itself is not the world's oldest peak. However, the core of the question is about the location of Guru Shikhar. Guru Shikhar is located in Rajasthan and is the highest point of the **Aravalli Range**.

Step 4: Final Answer:
Guru Shikhar is the highest peak of the Aravali Range.

black

Quick Tip

Be aware that questions in exams can sometimes contain minor factual inaccuracies in their premises. Focus on answering the main question being asked, which in this case is the location of the peak, not the validity of the world's oldest claim.

---

117. The winners of the Mixed Doubles title in the Wimbledon Tennis Championship 2012 are:

(A) Frederik Nielsen and Elena Vesnina
(B) Jonathan Marray and Lisa Raymond
(C) Leander Paes and Elena Vesnina
(D) Mike Bryan and Lisa Raymond

Correct Answer: (D) Mike Bryan and Lisa Raymond

Solution:

Step 1: Understanding the Concept:
This is a general knowledge question about a specific sporting event in 2012.

Step 2: Key Formula or Approach:
Recall or search for the results of the 2012 Wimbledon Championships.

Step 3: Detailed Explanation:
The winners of the Mixed Doubles final at the 2012 Wimbledon Championships were the American pair **Mike Bryan and Lisa Raymond**. They defeated the Indian-Russian pair Leander Paes and Elena Vesnina in the final.
Step 4: Final Answer:
The winners were Mike Bryan and Lisa Raymond.

black

Quick Tip

Winners of major sporting events like the Grand Slams in tennis, FIFA World Cup, and the Olympics are very common GK questions. It's helpful to be familiar with the results from recent years relevant to the exam period.

118. Vembanad Lake is the longest lake in India. It is located in:

(A) Kerala
(B) Tamil Nadu
(C) Odisha
(D) Maharashtra

Correct Answer: (A) Kerala

Solution:

Step 1: Understanding the Concept:
This is a straightforward geography question about the location of a major lake in India.

Step 2: Key Formula or Approach:
Recall geographical facts about India.

Step 3: Detailed Explanation:
Vembanad is the longest lake in India and the largest lake in the state of **Kerala**. It is a large brackish lagoon and is central to the famous Kerala backwaters tourism. The Nehru Trophy Boat Race is held on a part of this lake.
Step 4: Final Answer:
Vembanad Lake is located in Kerala.

black

Quick Tip

Knowing major geographical features of India (longest river, largest lake, highest peak, largest desert, etc.) and their locations is fundamental for the general knowledge section of most competitive exams.

---

119. In the Men's 7-a-side Football event at the London Paralympics 2012, which of the following countries won the gold medal?

(A) Ukraine
(B) Brazil
(C) Russia
(D) Germany

Correct Answer: (C) Russia

Solution:

Step 1: Understanding the Concept:
This is a general knowledge question about the 2012 Paralympic Games.

Step 2: Key Formula or Approach:
Recall or search for the results of the London 2012 Paralympics.

Step 3: Detailed Explanation:
In the final of the Men's 7-a-side Football tournament at the London 2012 Paralympic Games, **Russia** defeated Ukraine by a score of 1-0 to win the gold medal. Iran won the bronze medal.
Step 4: Final Answer:
Russia won the gold medal.

black

> Quick Tip
>
> Major international sporting events, including the Paralympics, are important sources of general knowledge questions. Pay attention to medal winners, host countries, and significant records.

---

120. Gaddis tribe is found in:

(A) Himachal Pradesh
(B) Sikkim
(C) Kerala
(D) Arunachal Pradesh

Correct Answer: (A) Himachal Pradesh

Solution:

Step 1: Understanding the Concept:
This is a general knowledge question related to the ethnography and geography of India.

Step 2: Key Formula or Approach:
Recall the locations of major tribal groups in India.

Step 3: Detailed Explanation:
The Gaddis are a semi-pastoral tribe who primarily reside in the Dhauladhar mountain range in the state of **Himachal Pradesh**. They are also found in the adjoining Jammu region of Jammu and Kashmir. They are particularly known for their seasonal migration with their flocks of sheep and goats.

Step 4: Final Answer:
The Gaddis tribe is found in Himachal Pradesh.

black

> Quick Tip
>
> Knowing the states associated with prominent tribal groups of India (like the Bhils, Gonds, Santhals, Todas, and Gaddis) is important for the GK section of many Indian competitive exams.

---

121. Recently, Kaushik Basu has been appointed as the:

(A) India's permanent representative in UN
(B) Chief economist and senior vice president of IMF
(C) Secretary-General of the Commonwealth
(D) Chairman, Finance Commission of India

Correct Answer: (B) Chief economist and senior vice president of IMF

Solution:

Step 1: Understanding the Concept:
This is a general knowledge question about a high-profile appointment relevant to the year 2012.

Step 2: Key Formula or Approach:
Recall or verify the appointment of Dr. Kaushik Basu in 2012.

Step 3: Detailed Explanation:
In September 2012, after serving as the Chief Economic Adviser to the Government of India, Dr. Kaushik Basu was appointed as the Chief Economist and Senior Vice President of the **World Bank**. The option provided in the question states IMF (International Monetary Fund), which is incorrect. However, the designation Chief economist and senior vice president is correct, but for a different organization. Given the options, option (B) is the most likely intended answer despite the factual error of naming the IMF instead of the World Bank. This is a common type of error in exam questions.
Step 4: Final Answer:
While the appointment was to the World Bank, option (B) is the closest and likely intended answer.

black

Quick Tip

Be aware that questions in competitive exams can sometimes contain factual errors. In such cases, choose the option that is the best fit or most closely related to the correct fact, as it is likely the intended answer.

---

122. Recently, ICC Under-20 World Cup 2012 final was held in:

(A) London
(B) Berlin
(C) Tokyo
(D) South Africa

Correct Answer: (C) Tokyo

Solution:

Step 1: Understanding the Concept:
This is a sports-related general knowledge question from 2012. The question itself is flawed as the ICC (International Cricket Council) organizes an Under-19 World Cup, not an Under-20 World Cup. We must infer the most likely intended event.

Step 2: Key Formula or Approach:
1. Recognize the error in the question (ICC U-20). 2. Consider other major U-20 World Cups held in 2012. 3. Match the host city/country with the given options.

Step 3: Detailed Explanation:
- The ICC Under-19 Cricket World Cup in 2012 was held in Australia, which is not an option. - The FIFA U-20 Women's World Cup was held in Japan in 2012. The final was played in **Tokyo**. - Given that Tokyo is an option, it is highly probable that the question mistakenly referred to ICC instead of FIFA and was asking about the FIFA U-20 Women's World Cup.
Step 4: Final Answer:
Assuming the question intended to ask about the FIFA U-20 Women's World Cup 2012, the final was held in Tokyo.

black

Quick Tip

When a question contains an obvious factual error (like a non-existent tournament), try to find the closest real event that fits the year and the given options. This demonstrates lateral thinking and knowledge of the subject area.

---

123. Who was the Chairman of the Constituent Assembly's Minorities Committee?

(A) B.R. Ambedkar
(B) Alladi Krishnaswamy Iyer
(C) Harendra Coomar Mookerjee
(D) A.V. Thakkar

Correct Answer: (C) Harendra Coomar Mookerjee

Solution:

Step 1: Understanding the Concept:
This is a question on Indian Polity, specifically about the structure of the Constituent Assembly of India.

Step 2: Key Formula or Approach:
Recall the chairpersons of the major committees and sub-committees of the Constituent Assembly.

Step 3: Detailed Explanation:
The Constituent Assembly had a main Advisory Committee on Fundamental Rights, Minorities and Tribal and Excluded Areas, which was headed by Sardar Vallabhbhai Patel. This advisory committee had several sub-committees. The question asks for the chairman of the Minorities Committee, which most accurately refers to the **Minorities Sub-Committee**. The chairman of this sub-committee was **Harendra Coomar Mookerjee** (H.C. Mookerjee). B.R. Ambedkar was the chairman of the Drafting Committee.
Step 4: Final Answer:
Harendra Coomar Mookerjee was the chairman of the Minorities Sub-Committee.

black

Quick Tip

The chairpersons of key Constituent Assembly committees (Drafting, Union Powers, Provincial Constitution, Steering, and the Advisory Committee on FR Minorities) are extremely important topics for Indian polity questions.

---

124. Which of the following strait connects the Gulf of Aqaba with the Red Sea?

(A) Strait of Baltiysk
(B) Strait of Messina
(C) Straits of Tiran
(D) Strait of Hormuz

Correct Answer: (C) Straits of Tiran

Solution:

Step 1: Understanding the Concept:
This is a world geography question about major straits and water bodies.

Step 2: Key Formula or Approach:
Recall the locations of the straits listed in the options.

Step 3: Detailed Explanation:
- The Gulf of Aqaba is a large gulf at the northern tip of the Red Sea, east of the Sinai Peninsula.
- The narrow sea passages between the Sinai Peninsula and the Arabian Peninsula that connect the Gulf of Aqaba to the main body of the Red Sea are known as the **Straits of Tiran**.
- The Strait of Hormuz connects the Persian Gulf with the Gulf of Oman.
- The Strait of Messina connects the Tyrrhenian Sea with the Ionian Sea (in the Mediterranean).
- The Strait of Baltiysk connects the Vistula Lagoon to the Baltic Sea.

Step 4: Final Answer:
The Straits of Tiran connect the Gulf of Aqaba with the Red Sea.

black

Quick Tip

Major global maritime chokepoints like the Straits of Hormuz, Malacca, Gibraltar, Bab-el-Mandeb, and Tiran are important to know for geography and current affairs.

---

125. Who among the following Hollywood directors is the first person to make a solo dive to the Pacific Ocean trench?

(A) James Cameron
(B) Robert Wise
(C) Steven Soderbergh
(D) William Wyler

Correct Answer: (A) James Cameron

Solution:

Step 1: Understanding the Concept:
This is a general knowledge question about a significant exploration feat by a famous personality. The Pacific Ocean trench refers to the Mariana Trench, the deepest point on Earth.

Step 2: Key Formula or Approach:
Recall the news from March 2012 regarding this event.

Step 3: Detailed Explanation:
On March 26, 2012, Hollywood director **James Cameron**, known for films like Titanic and Avatar, made a record-breaking solo dive to the Challenger Deep, the deepest part of the Mariana Trench. He descended in a specially designed submersible called the Deepsea Challenger.
Step 4: Final Answer:
James Cameron is the director who made the solo dive.

black

Quick Tip

Significant scientific and exploration achievements, especially those involving famous people, often become general knowledge questions.

---

126. K.N. Tilak Kumar is the current president of:

(A) AIIMS
(B) NCERT
(C) Indian Newspaper Society
(D) National Commission for Scheduled Castes

Correct Answer: (C) Indian Newspaper Society

Solution:

Step 1: Understanding the Concept:
This question asks about the head of a specific organization in India, relevant to the year 2012.

Step 2: Key Formula or Approach:
Recall or verify the appointments for the Indian Newspaper Society for the period around 2012.

Step 3: Detailed Explanation:
K.N. Tilak Kumar, of the Deccan Herald and Prajavani group of publications, was elected as the President of the **Indian Newspaper Society (INS)** for the year 2012-2013 at its 73rd Annual General Meeting.
Step 4: Final Answer:
K.N. Tilak Kumar was the president of the Indian Newspaper Society in 2012.

black

Quick Tip

Heads of major industry bodies (like INS, FICCI, CII), regulatory bodies (SEBI, IRDA), and national commissions are important GK topics. Remember to check for the correct time frame.

127. National Commission for Protection of Child Rights (NCPCR) is the statutory body that monitors the implementation of the Act across the country. Who among the following is the current chairman of NCPCR?

(A) Shantha Sinha
(B) Yashwant Jain
(C) Amod Kanth
(D) Nina Nayak

Correct Answer: (A) Shantha Sinha

Solution:

Step 1: Understanding the Concept:
This question asks for the name of the chairperson of the NCPCR as of 2012.

Step 2: Key Formula or Approach:
Recall or verify the leadership of the NCPCR for the period.

Step 3: Detailed Explanation:
Professor **Shantha Sinha**, a renowned anti-child labour activist and Magsaysay Award winner, was the first chairperson of the National Commission for Protection of Child Rights (NCPCR). She served two terms, the second of which ran from 2010 to 2013. Therefore, in 2012, she was the chairperson.
Step 4: Final Answer:
Shantha Sinha was the chairman of NCPCR in 2012.

black

Quick Tip

The first head of any major new commission or organization is an important fact to remember, as they are often responsible for setting up the institution's initial framework.

---

128. The recommendations of the Inter-Ministerial Group (IMG) headed by Zohra Chatterjee are regarding:

(A) reforms in Stock Markets
(B) reform in banking sectors
(C) tax reform
(D) de-allocation of coal mines

Correct Answer: (D) de-allocation of coal mines

Solution:

Step 1: Understanding the Concept:
This GK question refers to a specific government committee active in 2012.

Step 2: Key Formula or Approach:
Recall or verify the purpose of the Inter-Ministerial Group (IMG) headed by Zohra Chatterjee.

Step 3: Detailed Explanation:
In 2012, amidst the Coalgate controversy, the Government of India formed an Inter-Ministerial Group (IMG) to review the progress of coal blocks that had been allocated to private companies but had not yet started production.
The IMG, headed by the Additional Secretary of the Coal Ministry, Zohra Chatterjee, was tasked with recommending whether these allocations should be cancelled. Its recommendations were regarding the **de-allocation of coal mines**.

Step 4: Final Answer:
The recommendations of the Zohra Chatterjee-led IMG were regarding the de-allocation of coal mines.

black

Quick Tip

Major controversies and the government committees formed to investigate them are a staple of current affairs questions in competitive exams.

---

129. Which of the following countries in the world is the biggest consumer of gold?

(A) China
(B) United States
(C) India
(D) Russia

Correct Answer: (C) India

Solution:

Step 1: Understanding the Concept:
This GK question asks to identify the largest gold consumer globally, in the context of the year 2012.

Step 2: Key Formula or Approach:
Recall or verify the global gold consumption data for 2012.

Step 3: Detailed Explanation:
For many years, including 2012, **India** was the world's largest consumer of gold, driven by massive demand from the jewelry industry and for investment purposes, particularly during festival and wedding seasons. While China's demand was rapidly increasing, India still held the top spot in 2012. China officially surpassed India as the world's biggest gold consumer in 2013.
Step 4: Final Answer:
In 2012, India was the biggest consumer of gold in the world.

black

> Quick Tip
>
> Economic rankings and data (like largest producer, consumer, importer, exporter) can change over time. When answering questions from past papers, always consider the year the question was asked.

---

130. Who is the current Chairman of Securities and Exchange Board of India (SEBI)?

(A) Prashant Sareen
(B) S.S.N. Moorthy
(C) U.K. Sinha
(D) P.K. Malhotra

Correct Answer: (C) U.K. Sinha

Solution:

Step 1: Understanding the Concept:
This question asks for the head of India's capital markets regulator as of 2012.

Step 2: Key Formula or Approach:
Recall or verify the tenure of the Chairmen of SEBI.

Step 3: Detailed Explanation:
U.K. Sinha (Upendra Kumar Sinha) was appointed as the Chairman of the Securities and Exchange Board of India (SEBI) in February 2011. He served a long and significant tenure until March 2017. Therefore, in 2012, he was the current chairman.
Step 4: Final Answer:
The Chairman of SEBI in 2012 was U.K. Sinha.

black

Quick Tip

The heads of key regulatory bodies in India, such as SEBI, RBI (Reserve Bank of India), IRDAI (Insurance Regulatory and Development Authority of India), and PFRDA (Pension Fund Regulatory and Development Authority), are important figures to know for GK sections.

---

131. Senkaku Islands is disputed between:

(A) England and France
(B) China and Vietnam
(C) China and Japan
(D) Egypt and Israel

Correct Answer: (C) China and Japan

Solution:

Step 1: Understanding the Concept:
This is a question on international relations and territorial disputes.

Step 2: Key Formula or Approach:
Recall or verify the details of the Senkaku Islands dispute.

Step 3: Detailed Explanation:
The Senkaku Islands (as they are known in Japan) are a group of uninhabited islands in the East China Sea. Their sovereignty is a major point of contention between **Japan**, which administers the islands, and the **People's Republic of China** (which calls them the Diaoyu Islands). The Republic of China (Taiwan) also claims the islands.
Step 4: Final Answer:
The Senkaku Islands are disputed between China and Japan.

black

Quick Tip

Major international territorial disputes, such as those in the South China Sea, Kashmir, and the Senkaku/Diaoyu Islands, are frequently covered in the news and are common topics for general knowledge questions.

---

132. Which of these is the largest producer of nuclear energy in the world?

(A) France
(B) USA
(C) India
(D) Russia

Correct Answer: (B) USA

Solution:

Step 1: Understanding the Concept:
This GK question asks to identify the country that generates the most electricity from nuclear power.

Step 2: Key Formula or Approach:
Recall or verify global nuclear energy statistics.

Step 3: Detailed Explanation:
In terms of total electricity generated (terawatt-hours), the **United States** has consistently been the world's largest producer of nuclear energy for decades, including in 2012.
While a country like France derives a much higher percentage of its electricity from nuclear power, the sheer scale of the US energy market means its total output is the largest.

Step 4: Final Answer:
The USA is the largest producer of nuclear energy in the world.

black

Quick Tip

Distinguish between the total amount of production and the percentage of reliance. France has the highest reliance (highest % of its electricity from nuclear), but the USA has the highest total output.

---

133. 'Struggle for Existence' is the autobiography of which of the following Indian woman leaders?

(A) Mayawati
(B) J. Jayalalitha
(C) Sushma Swaraj
(D) Mamta Banerjee

Correct Answer: (D) Mamta Banerjee

Solution:

Step 1: Understanding the Concept:
This question asks to identify the author of a specific book, presented as an autobiography.

Step 2: Key Formula or Approach:
Recall or verify the literary works of the politicians listed.

Step 3: Detailed Explanation:
While Mamta Banerjee's more well-known autobiography is titled My Unforgettable Memories, she has also authored several other books in Bengali, including Upalabdhi and Janatar Darbare. The book titled **'Struggle for Existence'** is widely attributed to her as well, often described as a collection of her essays and writings reflecting her political journey.
In the context of exam questions from that period, this title was associated with **Mamta Banerjee**.

Step 4: Final Answer:
'Struggle for Existence' is attributed to Mamta Banerjee.

black

Quick Tip

Autobiographies of famous political leaders, scientists, and sportspersons are a very popular category of general knowledge questions. It's helpful to maintain a list of important titles and their authors.

---

134. Recently China successfully tested the new 14,000 km-range Intercontinental Ballistic Missile (ICBM). What is the name of the missile?

(A) Dongfeng-41
(B) Varyag
(C) Brahmos
(D) Changez-2

Correct Answer: (A) Dongfeng-41

Solution:

Step 1: Understanding the Concept:
This is a GK question about a significant military technology development in 2012.

Step 2: Key Formula or Approach:
Recall or verify news reports about Chinese missile tests in 2012.

Step 3: Detailed Explanation:
In the summer of 2012, China conducted the first flight test of its new-generation, solid-fueled,

road-mobile ICBM. This missile, with a reported range capable of reaching the entire United States, is known as the **Dongfeng-41** or DF-41.
- Varyag was a Soviet-era aircraft carrier that China purchased, refitted, and commissioned as the Liaoning.
- Brahmos is a supersonic cruise missile jointly developed by India and Russia.
- Changez-2 is not a known Chinese missile designation.

Step 4: Final Answer:
The name of the missile is Dongfeng-41.

black

> Quick Tip
>
> Major developments in military hardware, especially strategic weapons like ICBMs, by global powers are significant current affairs events that often feature in GK exams.

---

135. Which of the following is a book written by Salman Rushdie?

(A) Swimming Home
(B) Joseph Anton
(C) Bring Up the Bodies
(D) The Lighthouse

Correct Answer: (B) Joseph Anton

Solution:

Step 1: Understanding the Concept:
This is a literature-based GK question asking to identify a work by a famous author. The context is likely books published around 2012.

Step 2: Key Formula or Approach:
Recall or verify the authors of the books listed.

Step 3: Detailed Explanation:
- (A) Swimming Home (2012) is a novel by Deborah Levy. - **(B) Joseph Anton: A Memoir (2012)** is the autobiography by **Salman Rushdie**, detailing his life in hiding after the fatwa was issued against him. Joseph Anton was his secret alias. - (C) Bring Up the Bodies (2012) is a historical novel by Hilary Mantel. - (D) The Lighthouse (2012) is a novel by Alison Moore.
Step 4: Final Answer:
Joseph Anton is the book written by Salman Rushdie.

black

Quick Tip

Major literary awards (like the Booker Prize, Pulitzer Prize, Nobel Prize in Literature) and new releases by world-renowned authors are important GK topics. The year 2012 was significant for all the authors listed, as their books were nominated for the Man Booker Prize.

---

136. Which of the following states has the highest number of joint families?

(A) Uttar Pradesh
(B) Rajasthan
(C) Bihar
(D) Haryana

Correct Answer: (A) Uttar Pradesh

Solution:

Step 1: Understanding the Concept:
This is a demographics/sociology question based on Indian census data. It asks which state has the highest absolute number of joint families.

Step 2: Key Formula or Approach:
Recall demographic data, particularly from the Census of India 2011, which would have been the latest data available in 2012.

Step 3: Detailed Explanation:
While states like Rajasthan, Haryana, and Bihar have a high percentage of their populations living in joint families, the question asks for the highest number. **Uttar Pradesh**, being by far the most populous state in India, has the highest absolute number of households of all types, including the highest absolute number of joint families, even if the percentage might be lower than some other states.
Step 4: Final Answer:
Uttar Pradesh has the highest number of joint families.

black

Quick Tip

Be careful to distinguish between questions asking for the highest number (absolute value) and the highest percentage (relative value). For absolute numbers, the most populous states are often the answer.

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137. Recently, FIFA has labelled a 10-month ban on Juventus coach Antonio Conte for not reporting match-fixing. Antonio belongs to:

(A) Canada
(B) Germany
(C) Australia
(D) Italy

Correct Answer: (D) Italy

Solution:

Step 1: Understanding the Concept:
This is a GK question about a major sports controversy from 2012.

Step 2: Key Formula or Approach:
Recall or verify the nationality of the football manager Antonio Conte.

Step 3: Detailed Explanation:
Antonio Conte is a famous football player and manager from **Italy**. In August 2012, while he was the coach of the Italian club Juventus, he was banned for 10 months by the Italian Football Federation (the ban was later extended worldwide by FIFA) for his failure to report attempted match-fixing during his tenure at a previous club, Siena.
Step 4: Final Answer:
Antonio Conte belongs to Italy.

black

Quick Tip

Major sports personalities, especially those involved in significant news events like transfers, victories, or controversies, are common subjects for GK questions.

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138. Current President of International Cricket Council is:

(A) N. Srinivasan
(B) Alan Isaac
(C) Suresh Kalmadi
(D) Nasim Ashraf

Correct Answer: (B) Alan Isaac

Solution:

Step 1: Understanding the Concept:
This question asks for the name of the President of the ICC as of 2012.

Step 2: Key Formula or Approach:
Recall or verify the leadership of the ICC for that period.

Step 3: Detailed Explanation:
In June 2012, **Alan Isaac** of New Zealand became the President of the International Cricket Council (ICC), succeeding Sharad Pawar. He served in the role until 2014. N. Srinivasan later became the first Chairman of the ICC in 2014 after the role of President was made more ceremonial.
Step 4: Final Answer:
The President of the ICC in 2012 was Alan Isaac.

black

Quick Tip

The leadership structures of major international sports bodies like the ICC, FIFA, and the IOC can change. Pay attention to the specific titles (President vs. Chairman) and the year in question.

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139. Which of the following organisation(s) has/have been chosen for the Skoll Award, 2012 for Social Entrepreneurship by the Skoll Foundation in Oxford, England?

(A) The National Association of Street Vendors of India (NASVI) and Nidan
(B) Sulabh International Social Service Organisation
(C) Sambhav and Rashtriya Swayamsevak Sangh
(D) Zed Tech Social Organisation

Correct Answer: (A) The National Association of Street Vendors of India (NASVI) and Nidan

Solution:

Step 1: Understanding the Concept:
This is a GK question about a specific international award for social work in 2012.

Step 2: Key Formula or Approach:
Recall or verify the Indian recipients of the 2012 Skoll Award for Social Entrepreneurship.

Step 3: Detailed Explanation:
The Skoll Foundation awards social entrepreneurs who are making large-scale change. In 2012, among the winners was Arbind Singh, founder of **Nidan**, an organization that works with the

urban poor in Bihar. Nidan helped incubate **The National Association of Street Vendors of India (NASVI)**, a federation that advocates for the rights of street vendors across India. The award recognized their joint impact.
Step 4: Final Answer:
The National Association of Street Vendors of India (NASVI) and Nidan were chosen for the award.

black

Quick Tip

Prestigious international awards given to Indian individuals or organizations (like the Nobel, Magsaysay, Booker, or Skoll Awards) are highly important for general knowledge preparation.

---

140. To promote institutional deliveries and to create awareness and responsibility towards health in pregnant women, which of the following States has introduced 'Surakshit Maa' and 'Swasth Maa' awards?

(A) Bihar
(B) Haryana
(C) Madhya Pradesh
(D) New Delhi

Correct Answer: (C) Madhya Pradesh

Solution:

Step 1: Understanding the Concept:
This question is about a specific state-level government health initiative.

Step 2: Key Formula or Approach:
Recall or verify the state that launched these specific awards.

Step 3: Detailed Explanation:
The 'Surakshit Maa' (Safe Mother) and 'Swasth Maa' (Healthy Mother) awards were part of initiatives launched by the state government of **Madhya Pradesh** to encourage better performance by health workers and institutions in promoting institutional deliveries and improving maternal health outcomes under schemes like the Janani Suraksha Yojana.
Step 4: Final Answer:
The state that introduced these awards is Madhya Pradesh.

black

Quick Tip

Major and uniquely named government schemes, both at the central and state levels, are a common source of GK questions. Pay attention to schemes related to health, education, and social welfare.

---

141. Which of the following airport authorities won the prestigious international 'Jane's ATC Award' for the year 2012?

(A) Louisville Regional Airport Authority (LRAA)
(B) Thunder Bay Airport Authority (TBAA)
(C) Airports Authority of India (AAI)
(D) Halifax International Airport Authority (HIAA)

Correct Answer: (C) Airports Authority of India (AAI)

Solution:

Step 1: Understanding the Concept:
This GK question is about a specific award in the aviation sector for the year 2012.

Step 2: Key Formula or Approach:
Recall or verify the winner of the Jane's ATC Award for 2012.

Step 3: Detailed Explanation:
In 2012, the **Airports Authority of India (AAI)** won the prestigious Jane's ATC (Air Traffic Control) Award in the 'Enabling Technology' category. The award recognized AAI's successful implementation of the GAGAN (GPS Aided Geo Augmented Navigation) system, a satellite-based augmentation system to improve the accuracy and integrity of GPS signals for civil aviation.
Step 4: Final Answer:
The Airports Authority of India (AAI) won the award.

black

Quick Tip

International awards won by Indian organizations, especially for technological achievements, are important current affairs topics for competitive exams.

---

142. Which of the following female actors has been awarded the 'best actress award' in 59th National Film Awards?

(A) Leishangthem Tonthoingambi Devi
(B) Vidya Balan
(C) Ananya Chatterjee
(D) Arundhati Nag

Correct Answer: (B) Vidya Balan

Solution:

Step 1: Understanding the Concept:
This question asks to identify the winner of a major film award in India for a specific year.

Step 2: Key Formula or Approach:
Recall or verify the results of the 59th National Film Awards. These awards, for films from the year 2011, were announced in 2012.

Step 3: Detailed Explanation:
At the 59th National Film Awards, **Vidya Balan** was awarded the Rajat Kamal (Silver Lotus) for Best Actress for her performance in the film *The Dirty Picture*. Leishangthem Tonthoingambi Devi won the award for Best Supporting Actress.
Step 4: Final Answer:
Vidya Balan won the best actress award at the 59th National Film Awards.

black

Quick Tip

The National Film Awards are India's most prestigious film awards. Knowing the winners for Best Film, Best Director, Best Actor, and Best Actress for recent years is essential for the GK section.

---

143. Santos Trophy is associated with which of the following games?

(A) Cricket
(B) Football
(C) Badminton
(D) Golf

Correct Answer: (B) Football

Solution:

Step 1: Understanding the Concept:
This is a sports GK question asking to link a major domestic trophy to its sport.

Step 2: Key Formula or Approach:
Recall the names of major sports tournaments in India.

Step 3: Detailed Explanation:
The Santosh Trophy is an annual Indian **football** tournament contested by states and government institutions. It was the premier domestic football competition in the country for many decades.
Step 4: Final Answer:
The Santosh Trophy is associated with Football.

black

Quick Tip

Make a list of major domestic trophies in India and the sports they are associated with (e.g., Ranji Trophy - Cricket, Durand Cup - Football, Dhyan Chand Trophy - Hockey).

---

144. 'Do or Die' is associated with which of the following movement?

(A) Dandi March
(B) Non-Cooperation Movement
(C) Khilafat Movement
(D) Quit India Movement

Correct Answer: (D) Quit India Movement

Solution:

Step 1: Understanding the Concept:
This question is from Modern Indian History, asking to link a famous slogan to a specific national movement.

Step 2: Key Formula or Approach:
Recall the key events and slogans of the Indian independence struggle.

Step 3: Detailed Explanation:
The slogan 'Do or Die' (Karo ya Maro) was given by Mahatma Gandhi on August 8, 1942, at the Gowalia Tank Maidan in Bombay. It was a call to the Indian people for a determined, final push to end British rule, launching the **Quit India Movement**.
Step 4: Final Answer:
'Do or Die' is associated with the Quit India Movement.

black

Quick Tip

Important slogans and the leaders who gave them are a frequent topic in history-based GK questions. For example, Swaraj is my birthright (Tilak), Inquilab Zindabad (Bhagat Singh), Jai Hind (Subhas Chandra Bose).

---

145. Which of the following Retail Groups in India is the 50:50 partner of world's largest retailer Wal-Mart Stores Inc.?

(A) Bharti Group
(B) Mahindra Group
(C) Sahara Group
(D) Vodafone Group

Correct Answer: (A) Bharti Group

Solution:

Step 1: Understanding the Concept:
This is a business GK question about a major joint venture in India, relevant to the year 2012.

Step 2: Key Formula or Approach:
Recall or verify the corporate partnerships of Wal-Mart in India during that period.

Step 3: Detailed Explanation:
In 2007, Wal-Mart entered the Indian market through a 50:50 joint venture with **Bharti Enterprises**. The partnership operated wholesale cash-and-carry stores under the name Best Price Modern Wholesale. This partnership was active in 2012 but was eventually dissolved in 2013.
Step 4: Final Answer:
Bharti Group was the 50:50 partner of Wal-Mart in India in 2012.

black

Quick Tip

Major joint ventures and acquisitions involving large multinational corporations and Indian companies are important business-related general knowledge topics.

---

146. One recipient of the Swedish Right Livelihood Award 2012 belongs to Afghanistan. Name that recipient:

(A) Sima Samar
(B) Hayrettin Karaca
(C) Gene Sharp
(D) Campaign Against Arms Trade

Correct Answer: (A) Sima Samar

Solution:

Step 1: Understanding the Concept:
This GK question is about the winners of a specific international award in 2012.

Step 2: Key Formula or Approach:
Recall or verify the laureates of the 2012 Right Livelihood Award, often referred to as the Alternative Nobel Prize.

Step 3: Detailed Explanation:
The 2012 Right Livelihood Award had four recipients: - **Sima Samar** of Afghanistan, for her long-standing dedication to human rights, especially the rights of women. - Gene Sharp of the USA. - Campaign Against Arms Trade (CAAT) from the UK. - Hayrettin Karaca of Turkey. The recipient from Afghanistan was Sima Samar.
Step 4: Final Answer:
The recipient from Afghanistan was Sima Samar.

black

Quick Tip

When a question mentions a specific detail like the nationality of a prize winner, use that detail to quickly narrow down the possibilities and focus your knowledge recall.

---

147. 'Dans le harem de Kadhafi' is a book written by:

(A) Lewis Hamilton
(B) Annick Cojean
(C) Barack Obama
(D) Vladimir Putin

Correct Answer: (B) Annick Cojean

Solution:

Step 1: Understanding the Concept:
This question asks for the author of a specific French-language book.

Step 2: Key Formula or Approach:
Recall or verify the author of the book, which translates to In Gaddafi's Harem.

Step 3: Detailed Explanation:
Dans le harem de Kadhafi (published in English as Gaddafi's Harem) is an investigative book published in 2012 that details the sexual abuse of women by the former Libyan leader Muammar Gaddafi. The book was written by the French journalist **Annick Cojean**, who works for the newspaper Le Monde.
Step 4: Final Answer:
The book was written by Annick Cojean.

black

> Quick Tip
>
> Internationally acclaimed books, especially non-fiction works related to major geopolitical events or figures, can often appear in general knowledge exams.

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148. 12th Five Year Plan will be for the period of:

(A) 2010–2015
(B) 2015–2020
(C) 2011–2016
(D) 2012–2017

Correct Answer: (D) 2012–2017

Solution:

Step 1: Understanding the Concept:
This question is about the timeline of India's economic planning history.

Step 2: Key Formula or Approach:
Recall the periods of India's Five-Year Plans.

Step 3: Detailed Explanation:
India's Five-Year Plans were a series of national economic programs. The 11th Plan ended in March 2012. The **12th Five Year Plan**, which was the final plan before the Planning Commission was dissolved, covered the period from April 1, **2012**, to March 31, **2017**.
Step 4: Final Answer:
The 12th Five Year Plan was for the period of 2012–2017.

black

Quick Tip

Knowing the start and end years of the most recent Five-Year Plans is a key fact for questions on the Indian economy. Remember that the 12th plan was the last one.

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149. According to the latest report of Forest Survey of India, which of the following states has the largest forest cover area in India?

(A) Arunachal Pradesh
(B) Madhya Pradesh
(C) Maharashtra
(D) Andhra Pradesh

Correct Answer: (B) Madhya Pradesh

Solution:

Step 1: Understanding the Concept:
This GK question is about environmental geography, specifically forest cover in India. The latest report in the context of a 2012 exam would be the India State of Forest Report (ISFR) 2011.

Step 2: Key Formula or Approach:
Recall or verify the findings of the ISFR 2011.

Step 3: Detailed Explanation:
According to the India State of Forest Report 2011 (published by the Forest Survey of India), the state with the largest forest cover in terms of total area was **Madhya Pradesh**. Arunachal Pradesh had the second-largest forest cover. (Note: If the question were about the highest percentage of geographical area under forest cover, the answer would be different, with Mizoram being the top state).
Step 4: Final Answer:
Madhya Pradesh has the largest forest cover area.

black

Quick Tip

Key findings from important national reports like the Forest Survey, Census of India, and National Family Health Survey are very important for GK. Always distinguish between absolute numbers (total area) and relative percentages.

---

150. Aamir Khan is the national goodwill ambassador of which of the following organisations?

(A) UNESCO
(B) UNICEF
(C) ILO
(D) WIPO

Correct Answer: (B) UNICEF

Solution:

Step 1: Understanding the Concept:
This GK question asks to identify the UN agency with which a famous Indian celebrity is associated.

Step 2: Key Formula or Approach:
Recall or verify the brand ambassador appointments for major international organizations in India.

Step 3: Detailed Explanation:
In November 2011, actor and filmmaker Aamir Khan was appointed as a national goodwill ambassador for **UNICEF** (United Nations Children's Fund) to promote child nutrition and advocate for children's rights. His association, particularly through his TV show Satyamev Jayate, brought significant attention to social issues affecting children.
Step 4: Final Answer:
Aamir Khan is the national goodwill ambassador of UNICEF.

black

Quick Tip

Goodwill ambassadors for major UN bodies (like UNICEF, WHO, UNDP, UNESCO) are often prominent personalities. Knowing these associations, especially for ambassadors from your own country, is useful for GK exams.